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THESIS

The Application of Wage Incentives to Selected Phases of Office Work

by

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(B.S. Tufts College 1943)

submitted in partial fulfillment of
the requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

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I. Do Wage Incentives Have a Place in the Office?

Alexander Smith said in "On the Importance of a Man to Himself,"

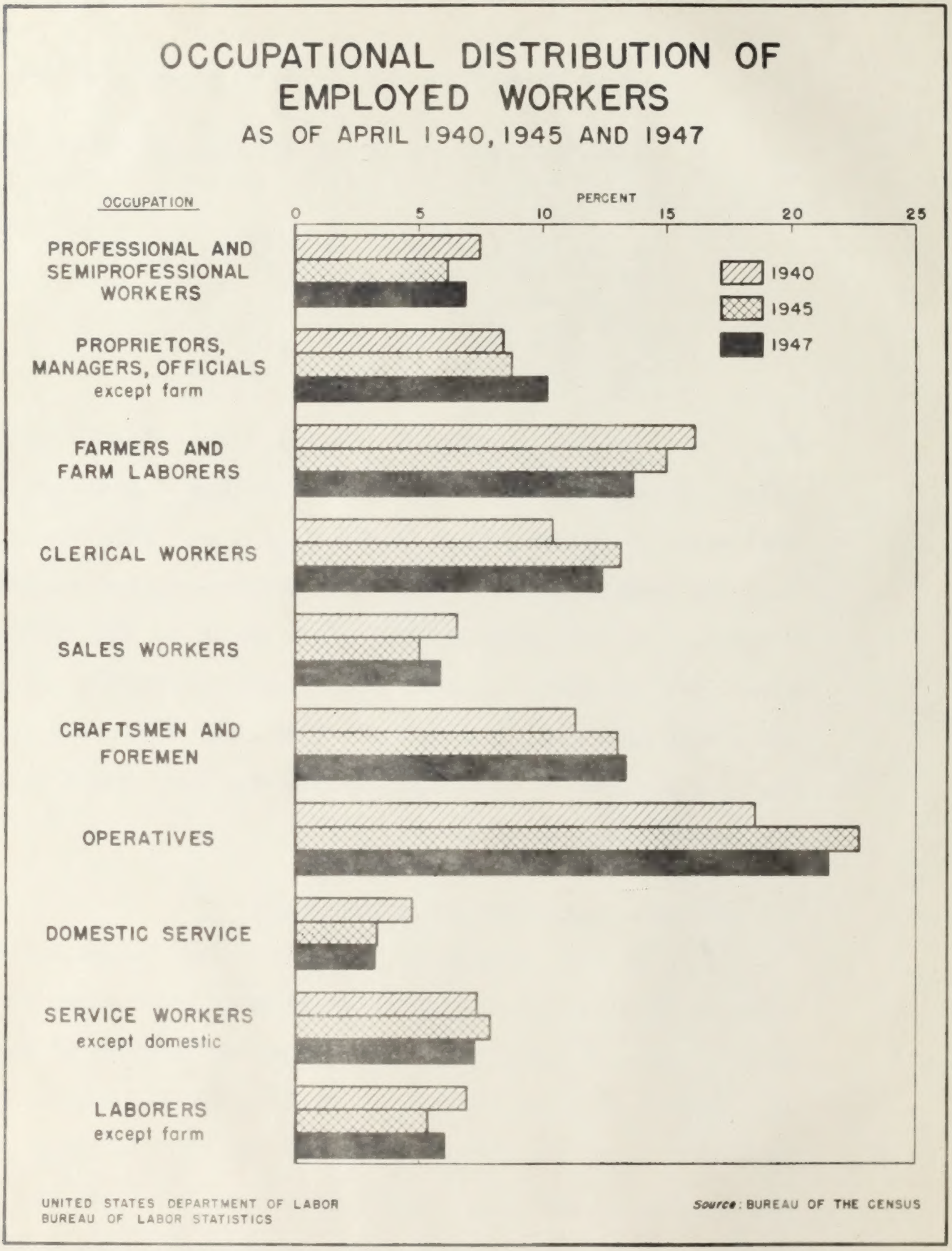
> In the wide arena of the world, failure and success are not accidents as we so frequently suppose, but the strictest justice. If you do your fair day's work, you are certain to get your fair day's wage - in praise or pudding, whichever happens to suit your taste.

Now it is perfectly true that we all like a little praise; it's a great morale booster. The "pudding," however, is what most of us are after in the long run. Farmers, miners, industrial workers, building mechanics, and office workers, all are striving for their place in the financial sun. Most of these groups, either through strong unions or potent political blocs, have been able to better their positions. Let us consider whether the last named group, the office worker, has.

The Growing Importance of Office Work

In this country of ours is a fast growing segment of the economy oftentime overlooked, too often derided. This segment is known as the "white-collar" group, the largest part of which is office workers. Recent decades have seen phenomenal growth on the part of this group. The impetus of industry, the stimulus of war, and the greater role of government have expanded the country's need for record keeping and correspondence work. The war

Figure 2



Monthly Labor Review (August, 1947), p. 146

years witnessed a rapid increase in the number of clerical workers; the peace has seen the group maintain its strength. Recent developments give every indication that the "white-collar" group will continue to gain in importance.[1]

The table below and the graph facing this page indicate the number and percent distribution of clerical workers in relation to the total number of employed workers in the United States. In 1940 the number of clerical

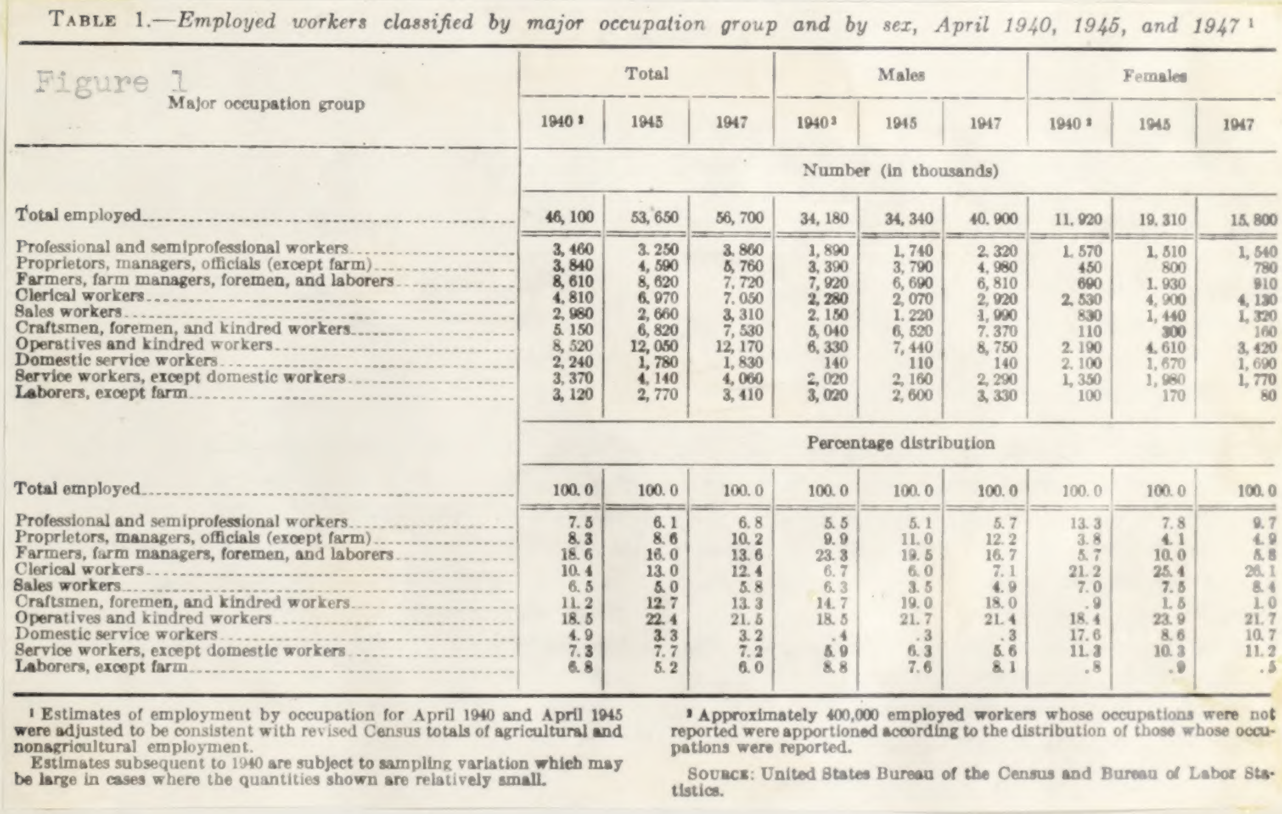


TABLE 1.—*Employed workers classified by major occupation group and by sex, April 1940, 1945, and 1947* [1]

Figure 1

Major occupation group	Total			Males			Females		
	1940[2]	1945	1947	1940[2]	1945	1947	1940[2]	1945	1947
	Number (in thousands)								
Total employed	46,100	53,650	56,700	34,180	34,340	40.900	11.920	19.310	15,800
Professional and semiprofessional workers	3,460	3.250	3.860	1,890	1,740	2.320	1.570	1,510	1,540
Proprietors, managers, officials (except farm)	3,840	4,590	5,760	3,390	3,790	4,980	450	800	780
Farmers, farm managers, foremen, and laborers	8,610	8,620	7,720	7,920	6,690	6,810	690	1.930	910
Clerical workers	4,810	6.970	7.050	2,280	2,070	2,920	2,530	4,900	4,130
Sales workers	2,980	2,660	3,310	2.150	1.220	1,990	830	1,440	1,320
Craftsmen, foremen, and kindred workers	5.150	6,820	7,530	5,040	6,520	7.370	110	300	160
Operatives and kindred workers	8,520	12,050	12,170	6,330	7,440	8,750	2.190	4,610	3,420
Domestic service workers	2,240	1,780	1,830	140	110	140	2.100	1,670	1,690
Service workers, except domestic workers	3,370	4,140	4,060	2,020	2,160	2,290	1,350	1,980	1,770
Laborers, except farm	3,120	2,770	3,410	3,020	2,600	3,330	100	170	80
	Percentage distribution								
Total employed	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Professional and semiprofessional workers	7.5	6.1	6.8	5.5	5.1	5.7	13.3	7.8	9.7
Proprietors, managers, officials (except farm)	8.3	8.6	10.2	9.9	11.0	12.2	3.8	4.1	4.9
Farmers, farm managers, foremen, and laborers	18.6	16.0	13.6	23.3	19.5	16.7	5.7	10.0	5.8
Clerical workers	10.4	13.0	12.4	6.7	6.0	7.1	21.2	25.4	26.1
Sales workers	6.5	5.0	5.8	6.3	3.5	4.9	7.0	7.5	8.4
Craftsmen, foremen, and kindred workers	11.2	12.7	13.3	14.7	19.0	18.0	.9	1.5	1.0
Operatives and kindred workers	18.5	22.4	21.5	18.5	21.7	21.4	18.4	23.9	21.7
Domestic service workers	4.9	3.3	3.2	.4	.3	.3	17.6	8.6	10.7
Service workers, except domestic workers	7.3	7.7	7.2	5.9	6.3	5.6	11.3	10.3	11.2
Laborers, except farm	6.8	5.2	6.0	8.8	7.6	8.1	.8	.9	.5

[1] Estimates of employment by occupation for April 1940 and April 1945 were adjusted to be consistent with revised Census totals of agricultural and nonagricultural employment.

Estimates subsequent to 1940 are subject to sampling variation which may be large in cases where the quantities shown are relatively small.

[2] Approximately 400,000 employed workers whose occupations were not reported were apportioned according to the distribution of those whose occupations were reported.

SOURCE: United States Bureau of the Census and Bureau of Labor Statistics.

Monthly Labor Review, (August, 1947), p. 140

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1. Wool, Harold, and Lester M. Pearlman, "Recent Occupational Trends," Monthly Labor Review, United States Department of Labor, Bureau of Labor Statistics, (August, 1947), p.147

workers was 4,810,000 or 10.4 per cent of the 46,100,000 gainfully employed workers in the nation. Clerical workers jumped to 13.0 per cent with 6,970,000 employed in 1945 out of a total of 53,650,000 workers. The year 1947 saw 7,050,000 clerical workers representing 12.4 per cent of the total working population of 56,700,000.[1] Analysis of these figures indicates that while the over all increase in the total number of all workers employed in 1947 was 23 per cent over 1940; clerical workers increased their numbers 47 per cent. One out of eleven was a clerical worker in 1940; 1947 saw this ratio decrease to one out of eight.

The Cost of Office Work

How much does it cost us to bill our customers? What is our outlay for accounting? How much do we spend for correspondence? These are all questions that are being asked more and more frequently by cost conscious executives who are looking for ways and means of trimming sail in the face of swirling costs.

An indication of clerical costs is afforded by the Prudential Life Insurance Company which recently estimated that it cost them an average of 80 cents to produce

[1] Wool, Harold, and Lester M. Pearlman, "Recent Occupational Trends," Monthly Labor Review, United States Department of Labor, Bureau of Labor Statistics, (August, 1947), p. 147

a letter. This estimate is the result of careful analysis on the part of their Cost Allocation Division. Even though this figure may seem amazingly high, they point out that it would be still higher (90 cents per letter) if stenographic transcription were used rather than their method of phonographic transcription in a centralized department.[1]

Reflection on this figure and extension of it to the total annual number of business letters a year dramatically illustrates the terrific cost of this one phase of office work alone. In peak years, 17 billion pieces of first-class mail are carried by the Post Office Department. If 4 billion of these are business letters at an average cost of 80 cents apiece, $3,200,000 is expended annually for business correspondence.[2]

Wage Comparison between Office and Industrial Workers

Wage data for office workers on a national scale is skimpy. Requests for this information from the Bureau of Labor Statistics were practically non-existent a few years ago; recent years have seen more interest on the part of employers and unions alike.[3] The Bureau com-

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1. Thiele, John E., "Office Week Forum," Office Management and Equipment (November, 1947), p. 40-41
2. Ibid., p. 40-41
3. Interview with Mr. Charles Rubenstein, Wage Analyst, United States Department of Labor, New England Regional Office 1, Bureau of Labor Statistics, October 29, 1947

pleted a wage analysis in January 1947 of "Weekly Earnings for Selected Occupations" of four life insurance company home offices in Boston, Massachusetts. The study covered 33 job types and 3,029 workers.[1] A similar study was conducted in New York City by a private organization. One hundred companies were included in the study, and data was collected on 25 job types covering 16,428 employees.[2]

The Bureau's Boston study revealed the highest pay received (excluding the supervisory position of Section Head) was $54.25 for men underwriters and $45.33 for women loan and surrender approvers. The lowest pay was $29.68 for office boys and $26.03 for office girls. The average pay was $42.13 for men and $34.91 for women. The survey by the New York Chapter of the National Office Management Association indicated that the highest pay was received by male payroll clerks and secretaries, and female secretaries. The lowest pays were received by male and female messengers. The average weekly earnings were $41.44 for men and $38.12 for women.

A comparison with the wages received by industrial workers and building mechanics indicates a marked

1. Weekly Earnings for Selected Occupations, Life Insurance Home Offices, Boston, Mass., United States Department of Labor, Bureau of Labor Statistics, Division of Wage Analysis, (January 1947)
2. Office Salary Rates - 1947, Office Executives Association of New York, Inc., New York Chapter of National Office Management Association

difference in earnings from those received by office workers. Minimum wage rates agreed upon through collective bargaining between employers and trade unions in January, 1947 in Boston, Massachusetts called for payment for a forty hour week of $79.80 to brick-layers, $70.00 to carpenters, $80.00 to plasterers and $50.00 to laborers. Bricklayers, carpenters and plasterers in New York City received $100.00 per forty hour week, and laborers received $50.00.[1] A survey of 13 manufacturers of women's apparel employing 335 women out of a total working force of 364 workers, showed average earnings for a forty hour week to be $45.60 for all workers, $49.20 for men and $45.20 for women. The survey revealed that 69 per cent of all the plant workers were paid on an incentive basis.[2]

The Employees' Need for Incentives

Although part of the wage differential between industrial and office workers can be attributed to a great many factors, it must be admitted that the correlation that exists between wages and productivity in industry con-

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[1] Union Wage Scales for Selected Building Trades in 75 Cities January 15, 1947, United States Department of Labor, Bureau of Labor Statistics, Wage Analysis Branch, January 29, 1947

[2] Women's and Misses' Blouses and Waists, Wage and Related Practices, Boston, Mass., January 1947, United States Department of Labor, Bureau of Labor Statistics, Division of Wage Analysis, January 1947

tributes greatly also. The widespread use of wage incentives affords the industrial worker an opportunity to increase earnings by increasing production.

There is no doubt that the use of wage incentives declined somewhat during the seven year period preceding the war. However, the number of companies still using them is evidence of their utility. A nationwide survey of personnel policy in 1939 which covered 2,700 companies in all types of business and employing nearly 5 million people, indicated that 51.7 per cent of the companies used wage incentive plans of some kind.[1]

This opportunity of increasing earnings by increasing production is denied the majority of office workers. Any increases of effort on the part of workers not on an incentive basis accrue solely to the benefit of the employer, the worker having no share in the consequent increase in production.[2] Most office workers then have no inducement to exert themselves; workers' interest in their work lags, and employers pay extravagantly for their products. Wage incentive principles have been adapted to office work only fairly recently.

> "Wage" incentives were not extensively adapted to office work much before 1923.

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[1] The Management Almanac, National Industrial Conference Board, (1946), p. 109

[2] Halsey, F. A., "The Premium Plan of Paying for Labor," Economic Studies, Volume I Number 2, (1896), p. 75

> In fact, every one said it simply could not be done. Nevertheless, some 5% of the large companies have now applied incentives to typists, key-punch operators, etc., and 11% have done so to billing and order clerks. This has become necessary because the proportion of office work to shop work has increased. 1

The chart below, which is a summarization of the results of a survey conducted at the end of 1945, is indicative of how relatively few office workers were covered by incentive plans at that time.

Figure 3

SALARIED EMPLOYEES PAID INCENTIVES		
Practice	Companies	
	Number	%
Total	230	100.0
None paid	158	68.7
Supervisors, foremen	20	8.7
Executives	14	6.1
Salesmen	13	5.7
All employees	10	4.4
Bookkeeping machine operators	2	0.9
Superintendents	2	0.9
Typists	2	0.9
Addressograph operators	2	0.9
Planning and schedule clerks	1	0.4
Department heads	1	0.4
Purchasing agents	1	0.4
Key punch operators	1	0.4
Transcribing machine operators	1	0.4
Buyers	1	0.4
Telephone ad-takers	1	0.4

The Management Almanac, National Industrial Conference Board, (1946), p. 95

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1. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 370

One thing of many we are proud of in this country is that neither political, economic or social privilege comes to one by right of birth. The members of each new generation are supposed to start from scratch. Merit alone should win.[1] Those of us who believe in free enterprise and the profit motive, will nod our heads in agreement with the foregoing statements. Yet many, when asked if they consider wage incentives for office workers practical, will throw up their hands in horror at the thought of applying "factory systems" to office workers. These same executives who are, for the most part, on plans of their own where bonuses are paid for profits and sales, will say that financial incentives will "lower" the status of their office workers. Are financial stimuli degrading below a certain salary level, and proper and just above? Do not workers in the lower income groups deserve the same opportunity to increase their earnings by increasing their worth to the company?

Several applications of wage incentives to office work demonstrate that these employees are as eager to take advantage of the opportunities offered as are others. Incentive earnings have increased take-home pay greatly in many cases with the result that employees are more content

[1] Address delivered by Mr. James B. Conant before the Boston Conference on Distribution, Hotel Statler, October 21, 1947

and morale has been improved.

Fair wage incentive plans, properly administered, put each participating employee into business for himself. His ingenuity and willingness to work are challenged; if he meets the challenge, he is the gainer. A business man who is more capable than the average, rightfully gains the greatest profit. The best workers under wage incentive plans deservedly earn the greatest pay. The bonus they earn is their profit for the investment of time, energy, and ingenuity. James Lincoln, in summarizing his policy of incentive management said,

> Incentive is not primarily for the purpose of spurring people on to greater heights of accomplishment so that someone can gain from their efforts. It is a philosophy that will develop those things which are best in all of us. It is this outcome that must be the chief end sought. Only so is it sound and enduring. 1

We all work better when we have a goal to strive for, an objective in view. Proper incentives promote cooperation among all employees for the attainment of the desired objective. Incentives tend to develop the latent abilities of those who possess them and demonstrate the lack of ability on the part of those who do not. 2 Workers tend to discipline themselves, and thereby are re-

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1. Lincoln, James F., Lincoln's Incentive System (McGraw-Hill, 1946), p. 184
2. Ibid., p. 163

lieved of the often nagging supervision of the supervisors.

The Employers' Need for Wage Incentives

Wage incentives reward the efficient workers; the type of workers employers want. Capable workers will produce to the limit as long as they know standards are guaranteed, and there are no restrictions on earnings.

At a meeting of the Office Management Association, Mr. Henry A. McCashin of R. H. Macy Company's System Department, outlined fifteen basic causes of reduced output of office work as the following:

(1) presence of substandard workers due to relaxation in hiring standards,
(2) labor shortages,
(3) substandard supervisors,
(4) tendencies of supervisors to "let down,"
(5) relative drop in efficiency of the worker,
(6) inadequate or curtailed employee training,
(7) unbalanced working forces caused by the loss of employees during the war,
(8) use of fatigued workers and part-time employes,
(9) failure to set and use production standards for clerical workers in some companies; production standards allowed to lapse after being set in other companies,
(10) lack of wage incentive plans,
(11) relaxation of quality control,
(12) poor and inadequate working conditions,
(13) lack of form control,
(14) improper office layout
(15) failure to consider productivity in

the preparation of budgets.[1]

As a corollary to increased earnings for employees, employers secure higher production per unit of time and thus lower unit costs. Incentive plans also act to decrease labor turnover, improve employee morale, improve quality, reduce spoilage, lower the cost of supervision and provide better cost control.[2]

An indication of why some companies consider payment for production to be the best method of wage payment, can be gained by examining several facts which hold true only when the worker is paid base wages.

It is often said that the average worker produces only enough to "get by." Usually the entire level of productivity of any group is pulled down toward the pace of the least productive worker. Surveys in the office, just as in the plant, show the pre-incentive level of production of different groups to be 40 to 60 per cent of a full day's work.[3]

A fair day's work is considered by informed

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1. McCashin, Henry A., "What is the Cost Situation Today?," Keeping the Lid on Office Costs, Office Management Series Number 120, American Management Association, (1947), p. 4-6
2. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 10
3. Mackenzie, R. S., "The Relation Between Work Measurement and Pay Earned," Incentives and Work Standards in the Office, Office Management Series Number 115, American Management Association, (1946), p. 10

members of management to be about two-thirds of a full potential day's work. Even this two-thirds day's work is seldom reached or maintained in exchange for the base wage. Incentives to produce a fair day's work for base wages are few; the main ones being: self-satisfaction, promotional possibilities, and fear of losing the job. Under usual circumstances these incentives are smothered or nullified by several negative influences:

A. Resentment of fellow-workers for the "eager-beaver."
B. The feeling that output plays but little part in promotional opportunities.
C. The changed economic status of the worker, wherein fear of losing the job has already become negligible.
D. That unfortunate human characteristic of wanting the most return for giving the least. 1

Some companies are putting unwarranted faith in new machines and equipment which are supposed to pay for themselves by increasing production. A machine is only as good as its operator. Until the human potential is fully utilized, it cannot be expected that the mechanical will. In respect to office machinery there has been considerable discussion lately over whether or not electric typewriters can actually increase production. One company has conducted a test which purports that production is not in-

1. Mackenzie, R. S., "The Relation between Work Measurement and Pay Earned," Incentives and Work Standards in the Office, Office Management Series, Number 115, American Management Association, (1946), p. 10

creased. Another has found that six operators who, on an incentive plan, reached a production plateau on manual typewriters were able to increase their production an average of 10 per cent when assigned electric typewriters. These operators had the incentive to produce, and when they were given a better tool to work with, they utilized it fully.

During the war when we were faced with the choice of "produce or perish," the government, mainly through the War Production Board, encouraged the use of wage incentives as a method of increasing production. One of the Board's studies disclosed that in 234 war plants which had adopted use of incentives a short time previous, an increase in unit output resulted in 40 per cent of the cases. Where time studies were used in determining the basis of the plans, the average increase was 58 per cent.[1]

Incentives create other benefits among which, in their natural evolution, is the development of different cost controls and measuring sticks. Departments operating on an incentive plan can use the daily bonus report as the daily budget report. Development of these reports should be done cautiously so that they will not become needlessly complicated. The person in charge must, therefore, consider and combine all sources of control data so that the

[1] The Management Almanac, National Industrial Conference Board, (1946), p. 103

reports will be simple and as positive as possible.[1]

Company Motive

Worker acceptance of wage incentives and willingness to work conscientiously under them, determines success or failure for the plan. The upper-most questions in the worker's mind as he reads the announcement of the plan's installation are, "Why is the company doing it? What are they going to get out of it?" The company's motive is questioned.

If the company's motive is one of avarice, and if its main interest is in what benefits the plan will produce for the company, the benefits to the worker being of only secondary importance, then the launching is indeed perilous. On the other hand if the company's aim is to be fair to the workers and sincerely has their best interests at heart, the employees' confidence will be gained, and the plan will be given a fair chance to succeed.

Opposition to the Introduction of Wage Incentives

Opposition to the introduction of wage incentives to office work springs from many sources. Segments of management are not "sold" on the idea. Supervisors and workers alike are often skeptical. Some honestly object to the principle itself. Others oppose it because

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 27-28

they do not fully understand its basis, workings or meanings.

At a meeting of the British Association for the Advancement of Science, a special discussion on industrial incentives was concluded with the consensus of opinion being that the best incentives to hard work in industry are non-material, and that money is not the root of all energy. "We need to shake off mechanistic fallacies in the idea of incentives," Mr. Charles Madge declared during a joint discussion of the Economics and Psychology Sections. "Social scientists should concentrate on means of reducing discomfort and monotony of factory life as well as the economic insecurity and lack of social integration."[1]

One can hardly dispute Mr. Madge's contention that all is not serene in many of the world's factories, and that there is tremendous room for improvement. However, I am inclined to disagree with his inference that wage incentives retard the correction of these conditions. On the contrary, "the discomfort and monotony of factory (or office) life" meets a capable foe in the form of fairly conceived and justly administered wage incentives.

"Discomfort" is combatted by the methods analysis which should precede the establishment of production standards. Methods analysis is the means by which the

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1. The Christian Science Monitor (September 13, 1947)

"one best way" of doing the work is determined. It is inconceivable that the one best way could be realized at the discomfort of the operator. The most comfortable and easiest way for the operator usually means the most productive way.

"Monotony" is constantly opposed by the challenge of standards which are fairly set and capable of being surpassed by a nominal application of effort. So-called "creative work," such as that of writers and painters, is said to be interesting because it is always calling forth the artist's best if he is to succeed. So with wage incentives, the operator's ingenuity, skill and dexterity are challenged. If he meets the challenge, his success is the reward of extra pay. Dr. J. A. Bowie expressed the following opinion on the subject:

> Incentives are coming to be seen more as a matter of treatment than as a method of payment. A sense of participation cannot be cultivated if workers feel they are working in the interests of an enemy class. Joint consultation, profit-sharing, pension, provident, and other funds are not more than stones in the arch, which cannot be built unless supported by good will. 1

Dr. Bowie's assertion that "good will" is the only durable cornerstone for the establishment and perpetuation of harmonious personnel relations is shared by many. However, "good will" itself has important precepts

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1. The Christian Science Monitor (September 13, 1947)

among which are honesty, open-mindedness and fairness. All of which are essential to an incentive plan that will endure because of its own merit.

Unfortunately Dr. Bowie's observation that "incentives are coming to be seen more as a matter of treatment than a method of payment," is substantiated by the attitude of numerous companies. All too many are prone to praise their incentive installations solely on the basis of the savings in personnel and wages that have accrued to them. The approach is the same as those companies who worry about profits first and the consumer last, rather than attempting to gain business by providing consumers with better products at diminishing prices. Consumer satisfaction reflects itself by increased volume, thereby creating the necessary profit.[1] Earnings commensurate with production seem to be incidental to the reduction of cost. The use of wage incentives is urged not on the basis that willing and able workers are justly rewarded, but on the grounds that inefficient workers are easily spotted and can be removed. In order for workers to retain their self-respect, any bonus given to workers should be recognizable as being the direct results of their efforts, and not a paternalistic gesture on the part of the company.[2]

Although unionization of office workers has not

1. Lincoln, James F., Lincoln's Incentive System (McGraw-Hill, 1946), p. 161-162
2. Ibid., p. 158

progressed rapidly, recognition of union attitudes toward wage incentives in general indicate what pitfalls management must beware of and what objections must be overcome.

There are nearly 11,000,000 white-collar workers engaged in occupations in which there is union jurisdiction out of a total work force of 50,000,000. About 7,000,000 are in private industry, and 4,000,000 are employed by federal, state and local governments. About 1,400,000 of the 11,000,000, or one-eighth, are members of national unions.

There are 43 unions in the white-collar field. Among the workers represented in these unions are actors, architects, draftsmen, letter carriers, postal clerks, office workers, news and editorial writers, railway clerks, retail clerks, teachers, telegraph operators, telephone workers, train dispatchers, and federal, state, and municipal employees.[1]

It is interesting to note that the two large national unions, the A. F. of L. and the C. I. O., have strangely contradicting appeals to office workers to join their respective ranks. The craft-minded A. F. of L. partly bases its appeal to potential members of its office workers' union on the basis that the dividing line between

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[1] Stark, Louis, "Trends in Office Unionization," Office Morale - White Collar Unions, Office Management Series Number 105, American Management Association, (1944), p. 12-13

office and factory workers is disappearing. While the heretofore industry-minded C. I. O. assumes that office workers differ from factory workers in social status as well as viewpoint.[1]

The question of whether payment of workers according to production or by the hour is to be preferred, has been the result of a long and often bitter controversy. Opposition to incentive methods of wage payment by the unions started in an earlier period of union history when the advent of scientific management introduced more complex incentive plans. Worker feeling has been mollified somewhat today, and there are an increasing number of exceptions to the former unqualified opposition in both national and local unions. Union officials have tended to accept more the view that workers, by genuine collective bargaining, may be protected adequately and that with this protection, incentive methods of payment can provide secure incomes and actually help maintain the high wage standards of American workers.[2]

Unions have both opposed and approved the use of incentive plans. Workers have joined unions, gone on

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1. Stark, Louis, "Trends in Office Unionization," Office Morale - White Collar Unions, Office Management Series Number 105, American Management Association, (1944), p. 14
2. Kennedy, Van Dusen, Union Policy and Incentive Wage Methods (Columbia University Press, 1945), p. 50

strike, limited worker output, refused to work with "pacesetters," and have tried many other devices to forestall or control incentive systems. Some unions have succeeded in their anti-incentive campaigns, while on the other hand, incentive plans are operating successfully in plants and industries working under well-established union agreements. Most of the workers' distrust of incentive plans is based on past experience when the short-sighted practices of rate-cutting and speed-ups were resorted to by many companies.[1] Recent management enlightenment and correction of these devices makes untenable many arguments advanced by workers today against incentive systems.

A strong factor in advancing the acceptability of wage incentives on the part of workers is the recognition that manual skill and control are of such paramount importance in production that great differences between individual worker productivity are common. Union representatives themselves point out that these variations in output may be as great as 100 per cent, and, therefore, fair compensation can be made in no other way than by the use of incentive methods or payment.[2]

Positive steps can be taken to overcome worker

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1. Incentive Wage Plans and Collective Bargaining, Bulletin Number 717, United States Department of Labor, Bureau of Labor Statistics, (1942), p. 1
2. Kennedy, Van Dusen, Union Policy and Incentive Wage Methods (Columbia University Press, 1945), p. 53

objections to wage incentive plans. Educational programs can answer opposition based on the principle of incentive payment itself. The other major objections of workers, which are listed below can be eliminated by fair and just management practices.

One worker objection to incentive payment is based on criticism of the company's job study technique.[1] An honest approach to the study by the company, which is based on proven techniques and is fully explained to the workers so that no mystery about them remains, will, most often, correct this trouble.

Worker opposition to wage incentives often is based on resentment caused by poor or faulty management administration.[2] This is clearly the fault and responsibility of management. Equitable and clear-cut rules, adhered to strictly enough for the sake of consistency, but with enough flexibility so that injustices are not worked inadvertently, will usually dispel this source of opposition.

Suspicions of an employer's motives are aroused either by actual evidences of unfairness on the part of the employer, or an incomplete understanding by the employees of the company's motives.[3] It goes without saying

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1. Kennedy, Van Dusen, Union Policy and Incentive Wage Methods (Columbia University Press, 1945), p. 62
2. Ibid., p. 62
3. Ibid., p. 63

that in the establishment and administration of wage incentives, as in any other activity, "honesty is the best policy." To overcome the workers' suspicions, the employer first must be basically honest, and secondly, his position and policies must be so clearly stated and followed that there is doubt in the minds of no one as to what is expected of worker and company alike.

Another union objection to wage incentive plans is based more on their practice than on their theory. The unions contend that too often wage incentive plans have increased production per worker by exploiting his desire for higher income at the expense of the worker's health, safety, comfort, and the quality of his work, and that this is not true efficiency. Unemployment resulting from the application of incentive methods is also a union argument against their use.[1] These complaints could be valid even though case histories do not seem to be available. But again company motives in the use of wage incentives comes under fire and must be defended if worker cooperation is to be gained.

It is usually conceded that each individual has aptitudes which fit him to perform certain types of work best. People really qualified for the work they are doing

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[1] Kennedy, Van Dusen, Union Policy and Incentive Wage Methods (Columbia University Press, 1945) p. 143

are, in all probability, qualified to do it well. Incentive earnings are the reward for doing work well; this applies to quality as well as quantity. Jeopardy of worker health, comfort, and safety can be eliminated by taking the following course of action: thorough methods study of the job; engineering of the job to establish the "one best way" of performing the work; clear and complete job instructions; job specifications which indicate the type of individual needed to fill the job; selection of the proper individual by the personnel department; and finally, the thorough instruction of that person in the way in which the job is to be done. Proper engineering of the job, in addition to the careful selection and training of the person to do the job, will eliminate maladjustments and put the wage incentive on a firm foundation.

Maintenance of quality is a matter of standards. If the company has traditionally insisted on the maintenance of high standards, this condition will likely continue to prevail. Employees do not lose their work habits easily, especially if the company maintains its vigilance.[1]

Another objection frequently heard from workers is that if wage incentives are installed, operators have to work harder for the same income.[2] This presupposes

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1. Harvey, Trusselle, "The Advantages of Bonus Plans for Dictating Machine Operators," Office Management and Equipment (April, 1946), p. 38
2. Ibid., p. 38

that the first step of the employer is to cut salaries to a low figure and then substitute a bonus for the difference. A short-sighted practice of this sort would soon cause the incentive plan to fail. Sound incentives pay the going wage rate for the job, and bonus is paid for production over normal expectations. This "extra" production will serve to reduce costs for the company by reducing overhead. There is no social justification for a company wanting to reduce costs at the expense of the workers.

An obstacle rather than an objection to the application of wage incentives has been the lowered marginal utility of the gross bonus earnings to the worker under a high income tax scale. The government, by high taxes, works a hardship on incentive installations because bonus earnings are subject to the full tax. This disproportionate reduction of bonus earnings reduces their desirability.[1] At this writing legislation has been enacted which will be a step toward the amelioration of this condition.

[1] Lincoln, James F., Lincoln's Incentive System (McGraw-Hill, 1946), p. 158

II. Incentive Plans - Past and Present

A study of the practicality of applying wage incentives to measurable types of office work can benefit greatly by a review of wage incentive history. Examination of various types of plans, successful and otherwise, reveal many weaknesses which should be circumvented and numerous worthwhile aspects that can be profitably incorporated into the plans of companies embarking on wage incentive programs.

In the 1840's weaving in Scotland was done, for the most part, by men who owned their own looms. They were paid piece rates by manufacturers for their products. The beginning, then, of payment according to productivity originated in independent craftsmanship, thus re-emphasizing present day arguments for incentive payment on the basis that it puts workers into business for themselves. The beginning of wage incentives or payment according to results was what is still known as piece rates.

At the start of the factory system, piece work was common only in such industries as clothing and textile manufacture. These industries began as home work, the worker being paid by the bundle for completed or semi-completed work. When work was centralized in the factory, it was divided into many operations, making a further refinement in the incentive system possible. The majority of early industrial establishments did not apply piece

work because workers had to perform varied tasks; therefore, they had to possess higher, more versatile skill than the specialized piece worker had.[1]

Straight Piece Work Plan

Despite the fact that many types of wage incentive plans have been created since the origin of straight piece work, this plan is used more than any other.[2] Recently the modification of the guaranteed wage has been introduced and accepted. This combination of piece work with the minimum wage guarantee actually should be called the Manchester Plan.[3] However, for the purposes of this thesis, the plan will be referred to as the Straight Piece Work Plan. The chief characteristic of this plan is that standards are expressed as so much money for a given unit of production. Time standards, which have been developed from time studies, are converted into money rates by applying the time allowance for the job against the job's base rate. Incentive earnings begin when production passes the minimum amount of production required. Payment being made on the basis of so much money per piece.

One of the main reasons for the popularity of the

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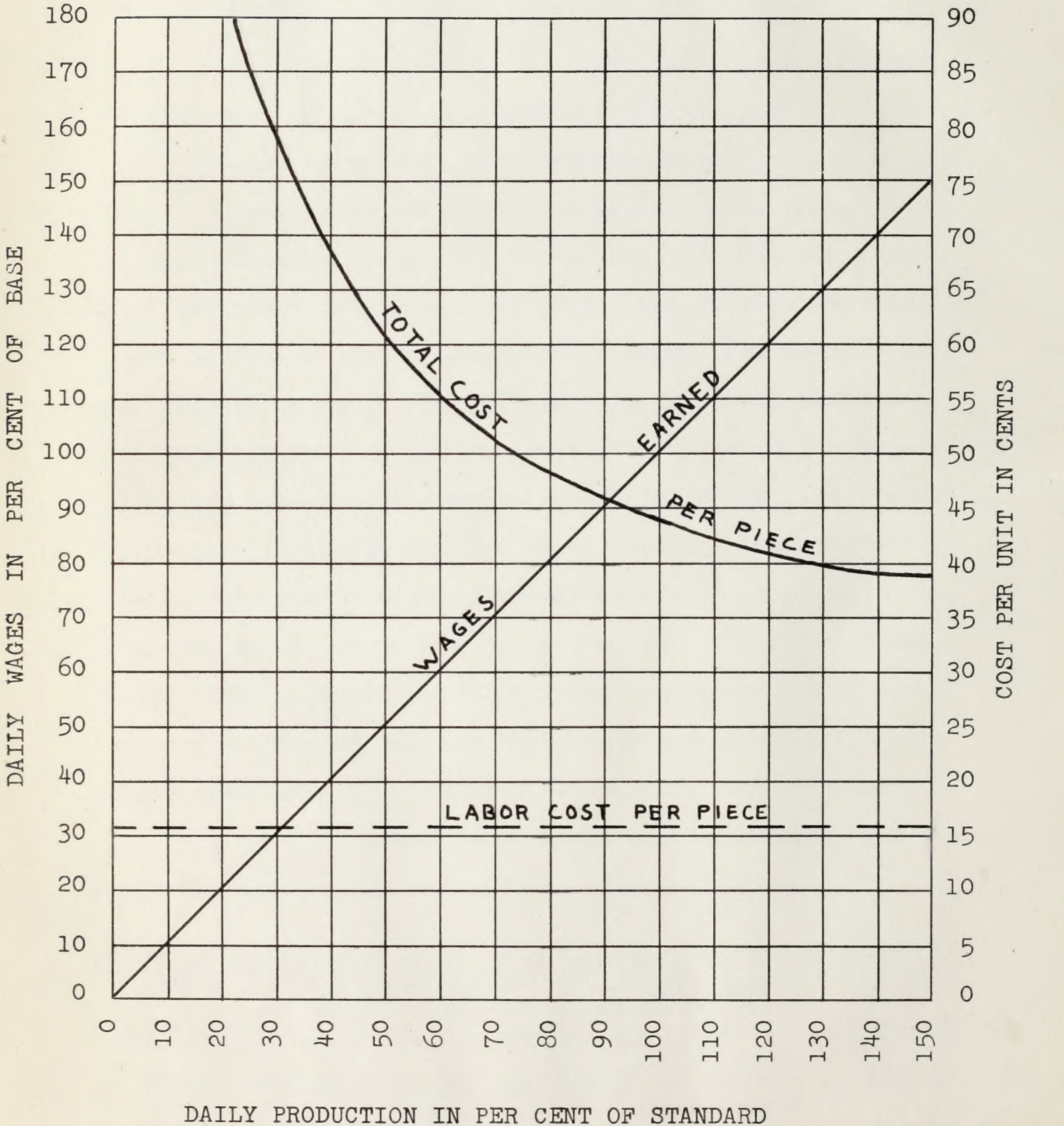
1. Incentive Wage Plans and Collective Bargaining, Bulletin Number 717, United States Department of Labor, Bureau of Labor Statistics, (1942), p. 2
2. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 38
3. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 168

Figure 4. Basic Straight Piece Rate Plan



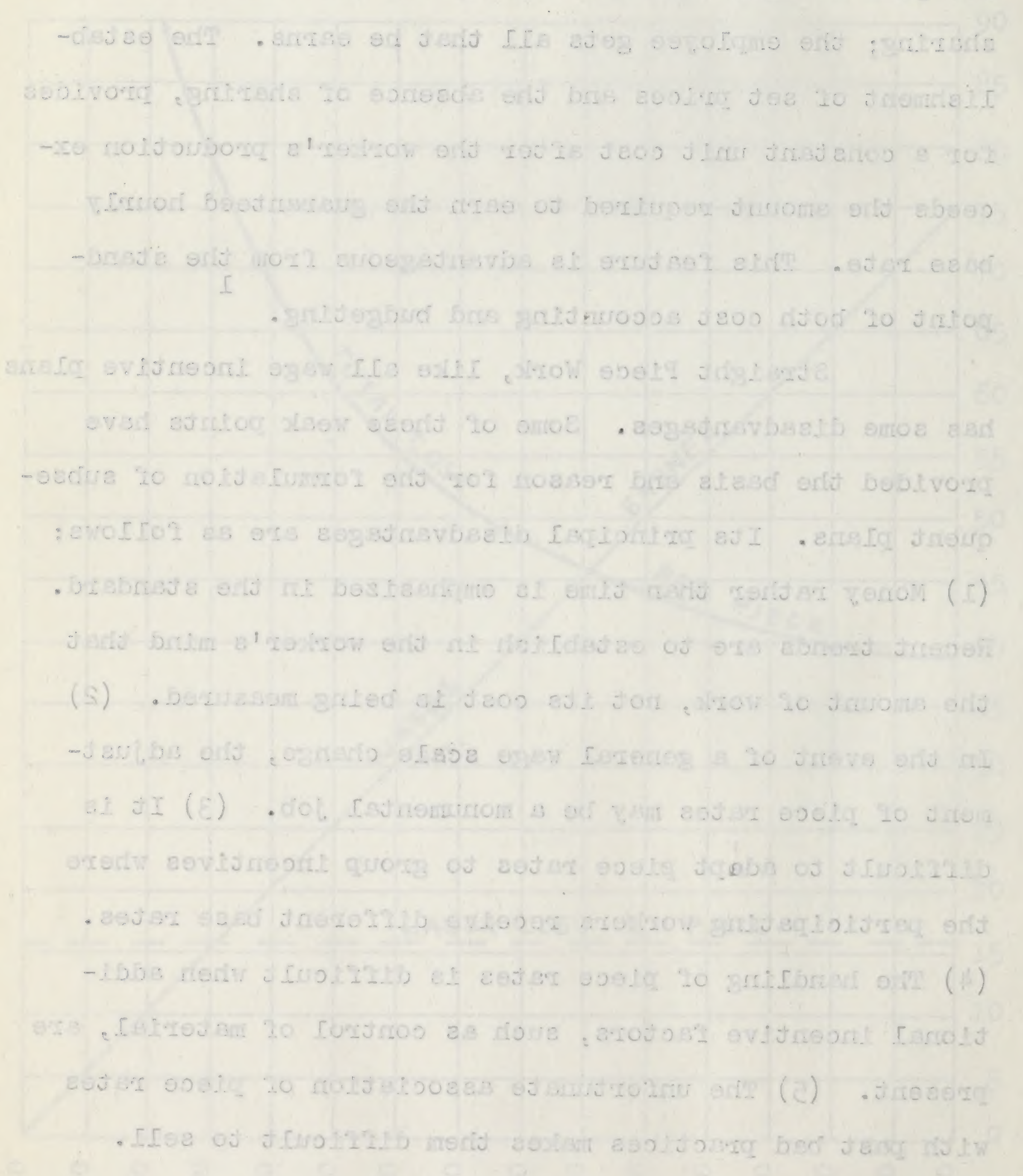
Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 157

Straight Piece Work Plan is that earnings computations are simple, and it is easily understood by the participants. The plan is also characterized by the fact that there is no sharing; the employee gets all that he earns. The establishment of set prices and the absence of sharing, provides for a constant unit cost after the worker's production exceeds the amount required to earn the guaranteed hourly base rate. This feature is advantageous from the standpoint of both cost accounting and budgeting.[1]

Straight Piece Work, like all wage incentive plans, has some disadvantages. Some of these weak points have provided the basis and reason for the formulation of subsequent plans. Its principal disadvantages are as follows: (1) Money rather than time is emphasized in the standard. Recent trends are to establish in the worker's mind that the amount of work, not its cost is being measured. (2) In the event of a general wage scale change, the adjustment of piece rates may be a monumental job. (3) It is difficult to adapt piece rates to group incentives where the participating workers receive different base rates. (4) The handling of piece rates is difficult when additional incentive factors, such as control of material, are present. (5) The unfortunate association of piece rates with past bad practices makes them difficult to sell.

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 38

Figure 1. Basic Straight Piecework Plan



DAILY PRODUCTION IN PER CENT OF STANDARD

Lytle, C. W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 137.

(6) When it is necessary to reduce a piece rate it takes the form of a money decrease which ordinarily does not set as well with the worker as when the reduction appears as a time decrease.[1]

Straight Piece Work, however, has its strong points, advantages which doubtlessly are the reason for its continued popularity. These advantages have been ably summarized by C. W. Lytle as follows:

> For the Employee:
>
> It is the most ethical of all plans.
> It is the second in simplicity of all plans to understand.
> It gives him 100% of savings relative to task at whatever pace he choses to work.
> It maintains the highest rate of increase as he increases effort.
> It leaves the upper field of earning wide open and so fosters ambition. This does not hold for group application.
> It is consistent with the highest manliness and independence.
> It stimulates interest in management and therefore in cooperation. This is intensified by a group application.
>
> For the Employer:
>
> It secures confidence in fair dealing.
> It simplifies cost and payroll figuring. This is furthered by group application.
> It increases and steadies the volume of production.
> It reduces unit overhead and therefore the total unit cost.
> It makes scheduling more dependable.
> It brings cooperation with management. This is furthered by group application.

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 38-39

> It permits the combination of a relatively low rate with a high task or vice versa.
>
> It may easily be operated on a time basis, that is, with decimals of an hour or with minutes.[1]

An important contribution to the maintenance of production by a piece rate plan is the compulsion worked upon management. Piece rate operators desire a steady flow of work from the previous operation. They also want this work as well as their materials and equipment to be in the best possible condition. Failure of management to maintain "normal conditions" usually is justifiably seized upon by the workers. Therefore, management is prodded by the workers and may actually, to a limited extent, drive those who are their supervisors.[2]

Taylor's Differential Piece Rate Plan

Frederick Winslow Taylor, by his introduction of the differential factor to straight piece work, is credited by many as being the predecessor of modern incentive plans. Taylor introduced his plan in 1880 in an attempt to reward good workers while standardizing and lowering costs. He pioneered the application of scientific principles to work and introduced the use of elemental motion analysis. He determined time values for each element, thus paving the

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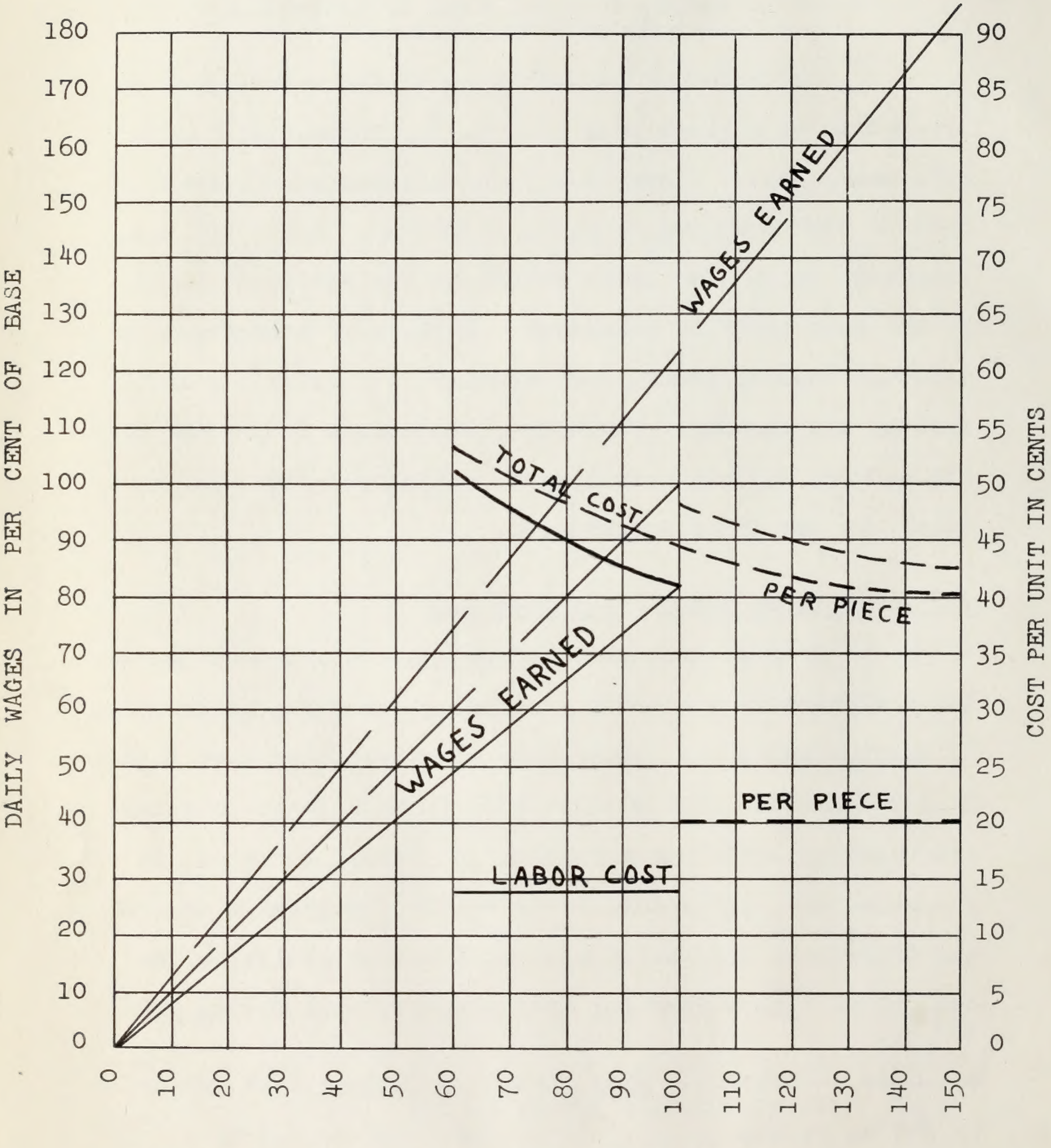
1. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 179
2. Ibid., p. 165

Figure 5. Taylor Differential

Piece Rate Plan



Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 180

way for the establishment of standard data from which rates can be synthesized.

Taylor believed that the Straight Piece Work Plan was inflexible and did not sufficiently induce marginal producers to produce more. His differential rate system of piece work offers different rates for the same job. A high price per piece is paid when work is finished in the shortest possible time and in perfect condition. A low price is applied when a longer time is taken to do the job or if there are imperfections in the work. Taylor's principle was to establish a high rate that would make it possible for good workers to earn more per day than was paid by similar establishments. In this way he hoped to attract the best workers and discourage poor workers from even applying for work.[1] The principle of a guaranteed minimum wage was not popular in Taylor's time, so this feature is absent from his plan. Any modern application would probably, of necessity, have to be modified in this respect in order to be acceptable.

As an example of the application of Taylor's principle, assume 20 pieces to be the largest amount of work of a certain type that can be produced in a day. A worker finishing 20 pieces, all of which are perfect, receives 40 cents per piece, making his pay for the day 20

[1] Taylor, Frederick W., "A Piece-Rate System," Economic Studies, Volume I Number 2, American Economic Association, (The MacMillan Company, 1896), p. 90

times 40 cents or $8.00. Should he work too slowly and produce only 19 pieces, the low rate is applied. He receives 30 cents per piece instead of 40 cents making his pay $5.70 instead of $8.00 per day. In the event he succeeds in producing 20 pieces, some of which are imperfect he would receive a still lower rate, say, 25 cents per piece, making his daily pay $5.00.[1] Due to the application of the differential principle, each man's work must be measured and inspected separately.

The Differential Piece Rate Plan offers a twofold incentive, one positive and one negative. Production which is excellent from the standpoint of quality as well as quantity is rewarded by high earnings, while low or faulty production is penalized. Taylor justified his plan by saying, "Justice, however, not only demands for the workman an increased reward for a large day's work, but should compel him to suffer an appropriate loss in case his work falls off either in quantity or quality."[2]

The success of Taylor's plan created a widespread demand for it, and many so-called "efficiency men" reaped a rich, if ill-deserved harvest between 1915 and 1930. This hey-day of hastily contrived and badly administered plans left a bad effect on both incentives and scientific

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1. Taylor, Frederick W., "A Piece-Rate System," Economic Studies, Volume 1, Number 2, American Economic Association (The MacMillan Company, 1896), p. 113
2. Ibid., p. 114

management. The ten greatest evils of the period, as compiled by J. Keith Louden, are as follows:

1. Failure to have supervision play a major role in the program and failure to train supervisors in the fundamentals of industrial engineering.
2. Failure to enlist cooperation of employees and to gain their full understanding and confidence.
3. Failure to recognize the caliber of men and the competency required to perform this work.
4. Failure to establish standard procedures and policies governing industrial engineering.
5. Failure to realize that industrial engineering consists of more than taking time studies and installing a wage incentive system.
6. Failure to guarantee standards once established against change unless there is a change in method, equipment or specification.
7. Establishment of a ceiling on incentive earnings above which an employee must not go or the standard will be cut.
8. Failure to analyze and establish standards for materials and spoilage.
9. Failure to establish rigid specifications and quality standards.
10. Failure to maintain properly and regularly measured standards and wage incentive installations once they are established. [1]

Gantt, an associate of Taylor in his work at the Bethlehem Steel Works, developed his Task and Bonus Plan in 1901 in order to upgrade men to the skill required to work under the Taylor Differential Piece Rate Plan. Gantt's plan substituted a day guarantee for Taylor's puni-

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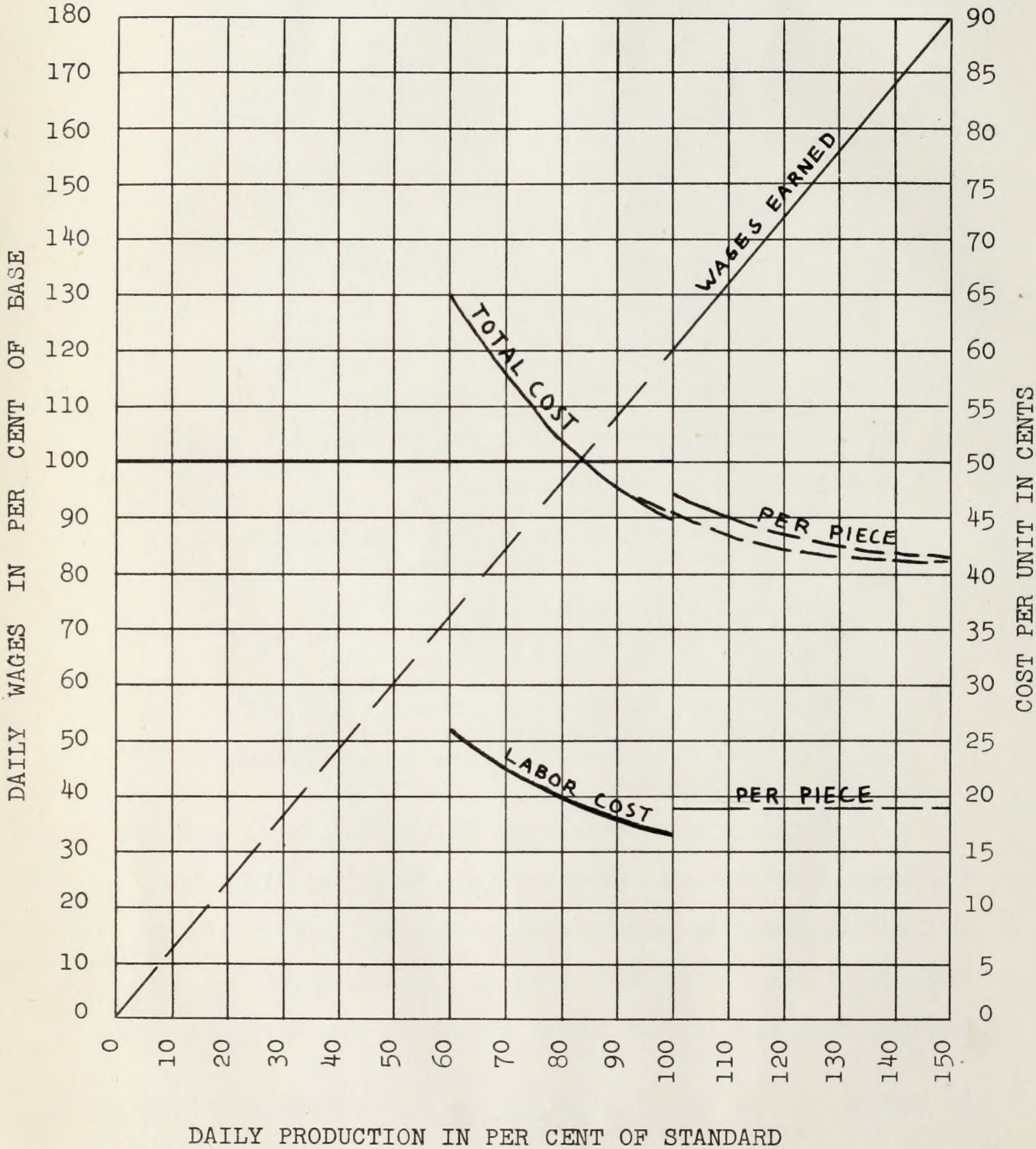
1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 1-6

Figure 6. Gantt Task and Bonus Plan



Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 189

tive low piece rate. However, he retained the Differential Piece Rate Plan above task, displacing it below task with a time guarantee. This humane feature of the Gantt plan is at the same time its weak point. Setting the guarantee too high causes less ambitious employees to be content with the guaranteed amount. With proper training the weakness of the day guarantee is minimized, and with guidance, workers are developed so that they are capable of incentive earnings.[1]

Various other modifications of Taylor's plan have been introduced, principal among which is the Merrick Multiple Piece Rate Plan which interjects an intermediate rate between Taylor's extreme rates. There is little difference between the terms "differential" and "multiple." Taylor used the word "differential" before "multiple" was applied to all plans based on more than one rate.

Merrick broke Taylor's large step into two smaller ones and put one at task and the other a little below task so that it would be within reach of the developing worker. He established the first step at about 83 per cent of task and paid 10 per cent, or one-half of the 20 per cent bonus at this step, and the other 10 per cent at task. This created three piece rates, thus tending to make the difference between the rates more gradual and less severe.[2]

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[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 209-212

[2] Ibid., p. 204

The trend today is toward simpler plans. Although piece rate plans in their various forms are still probably the most common, bonus plans using time standards are displacing them to some extent. Practically all plans now guarantee the base rate which is, in many cases, the going rate for the job.[1]

The Standard Hour Plan

The Standard Hour Plan is a modification of the Straight Piece Work Plan. The piece rate above task is figured on a standard hour basis instead of on a piece basis. For example, if the rate per piece is 15 cents and the task per standard hour is 5 pieces, computation on the piece rate basis would be as follows: 5 pieces times 15 cents equals earnings of 75 cents. On the standard hour basis, it would be figured as one standard hour at 75 cents. Thus the Standard Hour Plan emphasizes the number of hours, not the number of pieces.[2]

This plan, therefore, is more flexible in some ways than the Straight Piece Work Plan because of this different interpretation of the standard. It can be adopted more readily to group incentives because varying base rates do not create an obstacle; the only thing common is

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 7
2. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 168

the number of pieces per hour. Although the standard hour method of computation tends to reduce bookkeeping, it is unreasonable to use it so that it works to pay different amounts to different individuals for the same work.

Gain-Sharing Plan

Contemporary with Taylor was a manufacturer from Connecticut who advanced an interesting, though never popular plan, called Gain-Sharing. Henry R. Towne believed that employees should be induced by bonuses to work not only efficiently but also to economize in the use of materials. The plan called for the cash reward to be determined by profits in relation to factors under the control of the workers, and not by profit-sharing in its ordinary usage. Towne was of the opinion that the employees' share should not be affected by factors beyond their control such as buying raw material, sales and overhead charges. Towne listed the following factors as being those which affect the company's profit:

1. Factors contributed or controlled by owner - capital, plant, character of buildings, machinery and organization; and, to a greater or less degree, the skill, experience, industry, and ability of the owner so far as he personally manages the business.
2. Those influenced by the mercantile staff - the buyer and the seller in the case supposed.
3. Those determined by causes beyond the control of the principal and his agents; such as fluctuations in cost of raw

materials or in the market value of the finished product, the rate of interest, losses by bad debts, etc.

4. Those influenced by the workers or operatives; such as care of property, economy in the use of material and supplies, and chiefly, efficiency in the use of machinery and employment of labor. [1]

The solution to equitable payment, as seen by Towne, was the allotment to each employee of an interest in that part of the profit fund which can be affected by his own efforts, but not changed by the actions of others. The yardstick against which performance is measured under Gain-Sharing is the cost per unit which is based on past performance. A contract price per unit, based on actual costs, is established, and a contract is written with the workers. Accurate accounting of charges is kept, and employees are given monthly reports on the progress. Annual savings are calculated; 50 per cent of which go to management, 10 per cent to the supervisors and 40 per cent to the employees. The per cent that savings are of total earnings, is calculated, and this percentage is applied against the employees' annual earnings to determine their share.[2]

Taylor happened to be present when Towne presented his plan before the American Economic Association, and his

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[1] Towne, Henry R., "Gain-Sharing," Economic Studies, Volume I Number 2, American Economic Association, (The MacMillan Company, 1896), p. 52-53

[2] Ibid., p. 56

reaction to the plan is interesting. He felt that its tendency to base the reward on the accomplishment of the group rather than on an individual basis was the plan's principal weak point. He stated that the plan had other defects which were corrected by his own differential rate system. Taylor summarized these as follows:

(1) That it is slow and irregular in its operation in reducing costs, being dependent upon the whims of the men working under it.
(2) That it fails to especially attract first-class men and discourage inferior men.
(3) That it does not automatically insure the maximum output of the establishment per man and machine. 1

Halsey's comments on profit sharing plans in general are very interesting, only certain points of which can apply to Towne's plan because his plan overcomes some of the objections. His objections are as follows:

1. Workmen are given a share in what they do not earn such as improved management, better buying, decreased expenses of sales department, etc.
2. The workmen share, regardless of individual deserts.
3. The promised rewards are remote, time lag too great, interest wanes.
4. The plan makes no provision for bad years.
5. The workmen have no means of knowing

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1. Taylor, Frederick W., "A Piece-Rate System," Economic Studies Volume I Number 2, American Economic Association, (The MacMillan Company, 1896), p. 103

if the agreement is carried out.[1]

The 50 - 50 Premium Bonus Plan of Halsey

F. A. Halsey introduced his premium plan because he felt that both the piece work and Gain-Sharing plans were lacking. He argued that difficulties are created under the piece work plans by the fact that once the piece price is set, any increase in effort on the part of the workman, benefits him alone, and the employer does not share in the consequent saving of time. He further states that should the employer cut rates, employees then slow down because they feel that extra effort is useless.[2]

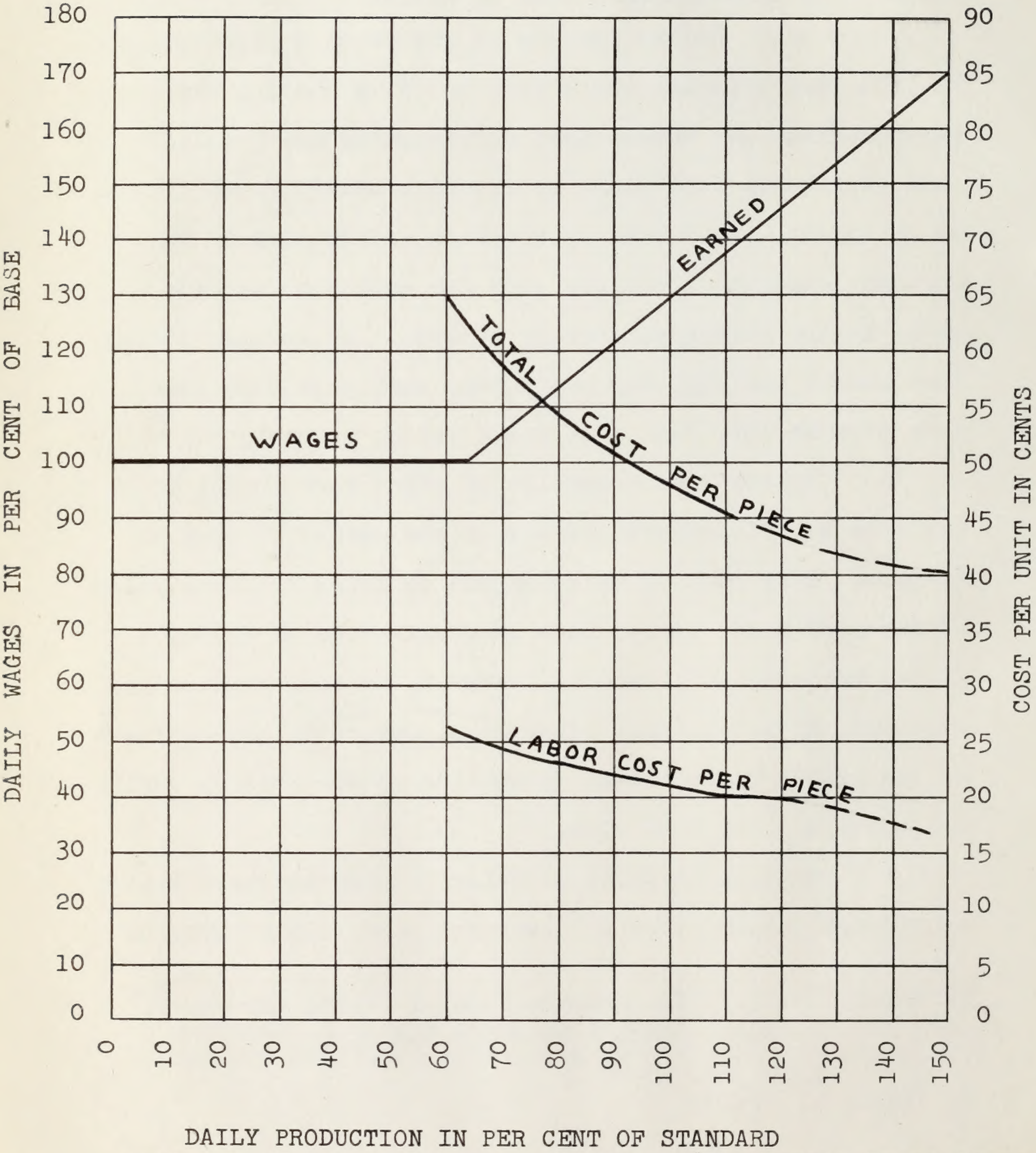
Halsey's condemnation of piece work on the basis that the benefit reverts solely to the worker is open to dispute. Many look on this feature as being a strong point in favor of piece work. This generalization of Halsey's cannot be accepted literally, however, because savings in overhead, if not in unit labor cost, revert to the employer as the result of increased production on the part of employees under a piece work plan.

Certain features of Halsey's plan inspired little confidence in advocates of clear-cut plans. His decrying

1. Halsey, F. A., "The Premium Plan of Paying for Labor," Economic Studies Volume I Number 2, American Economic Association, (The MacMillan Company, 1896), p. 78-80
2. Ibid., p. 76-78

Figure 7. Halsey (50-50)

Constant Sharing Plan



Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 205

of rate cutting as a means of decreasing employee earnings, while being sketchy about the establishment of standards, has provided potent ammunition for opponents of his own plan. The sharing feature of the plan is often looked upon as being a fence-sitting device to escape the responsibilities of establishing accurate standards and standing behind them. However, Halsey's plan is not without merit. Examination of the plan itself, divorced from the method of establishing standards, reveals certain redeeming features.

The 50 - 50 Premium Plan is based on time and gets its name from its sharing feature. The time saved by the worker, which is the difference between the allowed time for the task and the time the worker took to perform the task, is split 50 - 50 between employee and employer. After determination of the minimum time for the task, the standard is developed by adding double the desired bonus to it.[1] If, for example, the minimum time to perform a task is one hour, and the desired bonus is 25 per cent, one-half hour is added to the minimum time of one hour, and the standard for task becomes one and one-half hours. Therefore, the worker would be allowed 12 hours for the completion of 8 pieces. Completion of the task in 8 hours by the worker would result in a gross saving of 4 hours, half of

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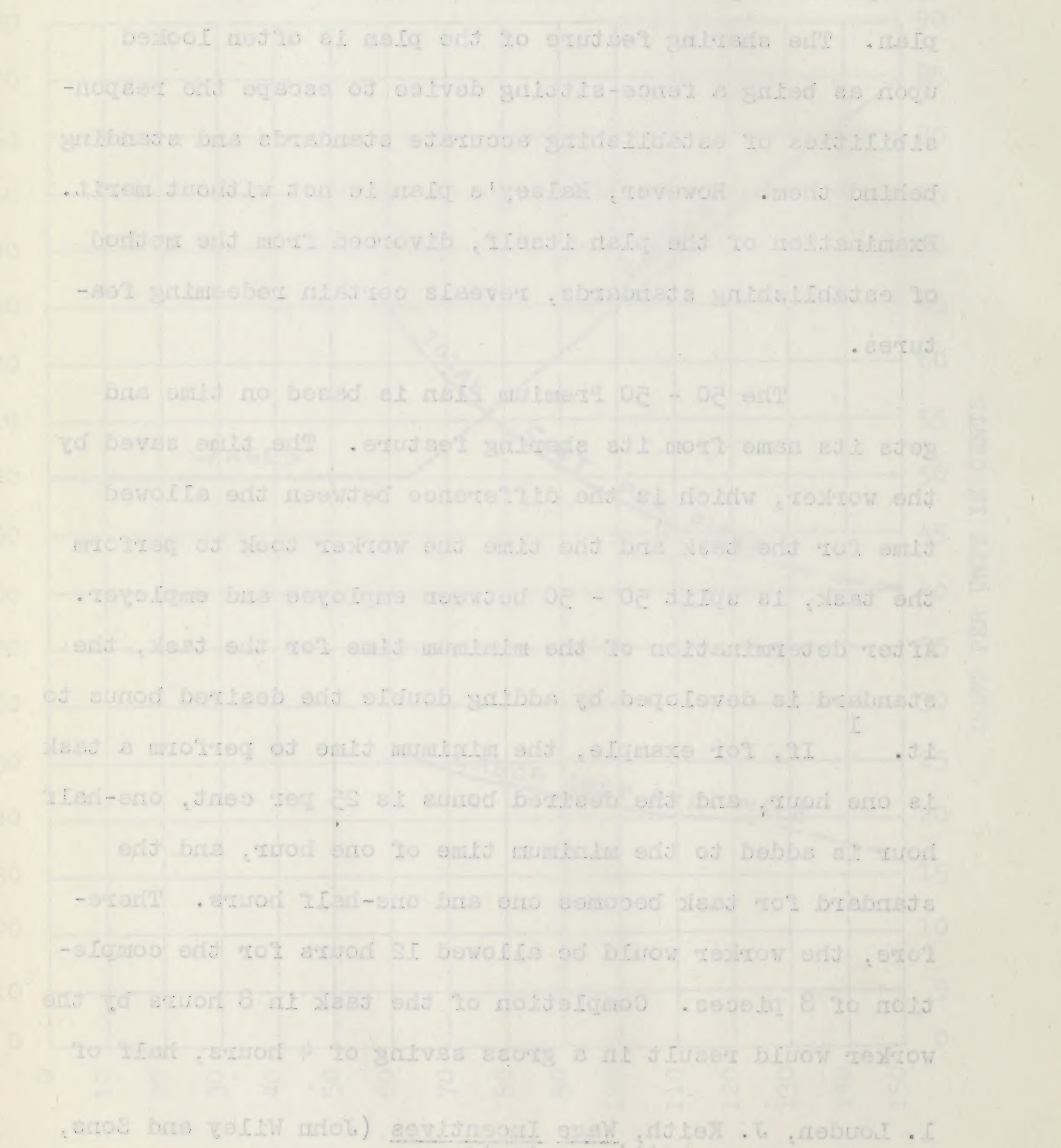
[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 41-42

Figure 7. Halsey (50-50)

Constant Sharing Plan



Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, which would accrue to the worker, while the other half would go to the employer. The worker thus earns a net bonus of 25 per cent for the eight hours spent. If his hourly pay was $1.00, he would receive $8.00 as his base rate plus 25 per cent of $8.00 or $2.00 in premium pay.

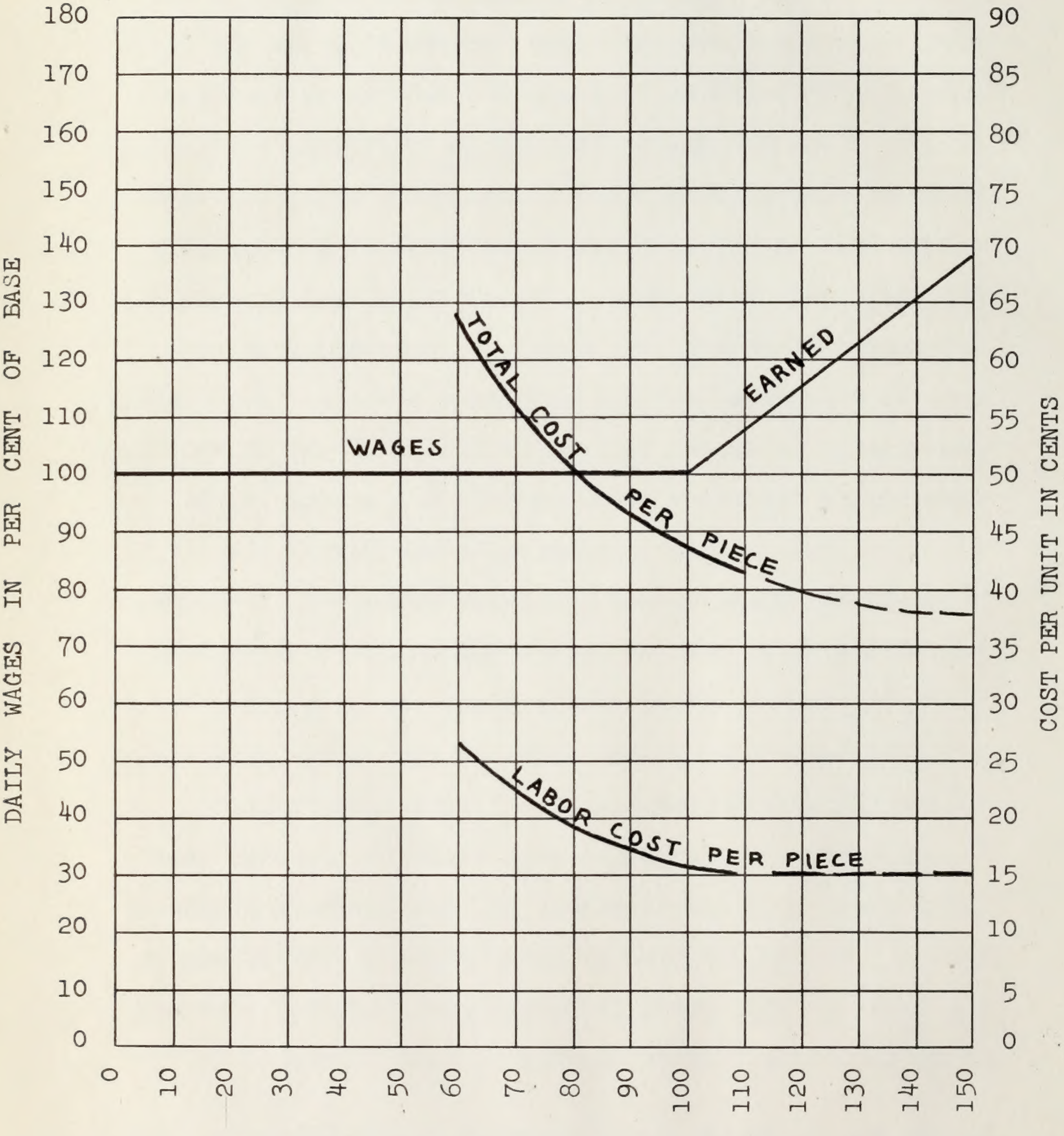
The feature of the employer doubling the desired bonus and then sharing the bonus equally with the worker enables the employee to earn some bonus at a relatively low efficiency performance. In the absence of accurately determined standards, the worker is somewhat protected against standards that are estimated too low. The company, conversely, is spared the embarrassment of excessively high earnings in the event the standards are set too high.[1]

Much of the opposition to the Halsey plan is based on its encouragement of inaccuracies in standards. Premium earnings derived from a percentage of efficiency basis, as in this plan, create a varying unit labor cost which is desirable neither from a budget nor a cost viewpoint. Payment of bonus at low levels of efficiency, though encouraging to newcomers, tends to increase unit labor costs disproportionately at this level of productivity.[2] The Halsey plan by its payment by percentage on the basis of time saved is particularly adaptable to groups where there are workers of varying wage levels.

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 42
2. Ibid., p. 42

Figure 8. Bedaux Point Premium Plan

A (75-25) Constant Sharing Through High Task



DAILY PRODUCTION IN PER CENT OF STANDARD

Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 231

Bedaux Point Premium Plan

This plan was first introduced in 1916 by Charles E. Bedaux. It guarantees time wages up to high task, and for many years the constant sharing principle was used from that point on. Sharing was usually on a basis of 75 per cent to the employee and 25 per cent into a pool out of which a supervisors' bonus was paid.[1] Most companies now using the plan have discontinued this practice, the worker being paid 100 per cent of the bonus he earns.[2]

Bedaux's plan differed from all prior incentive plans in that it emphasized the development and use of efficiency measuring sticks. This additional feature of cost control provided management with another control tool.[3]

The plan also differed from other plans in the method of work measurement. All work is standardized on the basis of units of time; in this plan, a minute is the common denominator for performance in all departments of a company. This time unit is called a "Bedaux," a "B" or one of several other names, and is made up of the amount of work per minute plus its allowance for fatigue. Therefore, the B unit is composed of a fraction of a minute of

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1. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 250
2. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 42
3. Ibid., p. 42

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2. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 42
3. Ibid., p. 42

effort plus a fraction of a minute of relaxation. This unit varies in time value proportionately according to the effort necessary to perform the job in question. Standards are set so that 60 B's are task, 80 B's being considered average for experienced workers. The rate of pay is also on a minute basis, and transformation into hourly figures is easily made by dividing the number of B's by 60.[1]

The Bedaux plan is one of the most costly to administrate because the amount of clerical work necessary for its proper operation is considerable, often being five or six times as much as for most of the other wage incentive plans.[2] Established company-wide, the plan often is more important as a production control tool than as a wage incentive plan. The performance of individuals, departments, divisions, and plants can be compared because the B as the common denominator offers a basis for comparison. The nature of the plan is such then that companies which do not go into the plan company-wide fail to utilize its prime advantages.

The unit of measurement is useful in another way. This same B unit which is the basis of the Bedaux incentive plan can also be used for cost records. Standard costs can

1. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 251
2. Ibid., p. 252

be obtained by dividing the base or hourly rates on a given operation, group of operations or department by 60; there being 60 B's per hour in a standard performance. The B's produced divided into the money spent for direct labor gives the actual direct cost. Division of the B's produced into the indirect labor cost gives the actual indirect labor cost. The B's produced may be divided into the other overhead items, separately or in a group as required, to obtain other cost data.[1]

Measured Day Work

Measured Day Work is an incentive plan of fairly recent origin. It became somewhat popular in the early 1930's when labor unions were strongly opposing the existing incentive plans. Although standards are established in the same manner for this plan as for others, their application is different. First, job rates are established in accordance with rate structure principles. Then, on a direct proportion or 100 per cent basis, higher hourly rates are set at different levels.[2]

The worker's per cent of efficiency is computed daily by measuring performance against the standard with the results being posted. When he reaches and maintains

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[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 254

[2] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 42

a certain average efficiency for a stated period, such as three months, his base rate is accordingly increased, and that becomes his pay for the next three months. His efficiency rating for that three months becomes the basis for the next period's hourly rate. Assume a job rate of 80 cents an hour with an average efficiency rating of 80 per cent, and the plan is such that the worker receives a one cent increase in hourly rate for each per cent increase in efficiency. In the event he achieves an average efficiency rating of 90 per cent, his wages for the next period would be at the rate of 90 cents per hour.

While the system enjoyed a brief flurry of popularity, it soon fell into disfavor with the workers whenever it became necessary to reduce a job rate when efficiency had decreased. The plan, without the incentive feature, is still used occasionally but usually only for measuring production to obtain cost figures and as a measure of individual merit.[1]

Hour-for-Hour or 100 Per Cent Bonus Plan

The Hour-for-Hour Plan features payment to the worker of 100 per cent of the bonus earned and compares with Straight Piece Work in this respect. These plans are actually quite similar; the only major difference is that

[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 45

under the Hour-for-Hour Plan, standards are expressed in time per unit of production rather than money. This one change works to maintain the effective simplicity of the Straight Piece Work Plan while eliminating the disadvantages of money rates.[1]

Earnings can be calculated on either a per cent of efficiency or a time saved basis despite the fact that the standard is always in terms of time. As an illustration of the time saved basis, the standard would be developed as follows: If it actually takes an average worker one minute to do an operation, the company would add 25 per cent for incentive, and the standard time for the operation would be 1.25 minutes. Performance of the operation in one minute entitles the worker to a 25 per cent bonus. However, should he take 1.25 minutes to do the work, he receives no bonus, only his guaranteed hourly rate, but he is still qualified for the job.

Computation of the bonus on an efficiency basis would establish the one minute standard as 100 per cent efficiency for the normal man. The 1.25 minute performance would be 80 per cent efficiency. The worker would then be paid a 1.25 per cent bonus for every per cent improvement in efficiency. The percentage of efficiency is derived by

[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 39

dividing actual hours into the standard hours; in the example given above, one minute equals 100 per cent efficiency.[1]

The Straight Piece Work Plan, from which the Hour-for-Hour Plan is derived, links the time study and the standard directly to money. While this form of expression has the advantage of being clearer to the worker, it can be disadvantageous to the company. In the event of blanket wage changes, adjusting and correcting the piece rates becomes a tedious and costly job. Where the bonus of the Hour-for-Hour Plan is expressed as a percentage of the wage, adjustments in base rates create no hardship. The plan also has the advantage of being more adaptable to group application where the participants have different base rates. The Hour-for-Hour Plan has a better psychological chance for acceptance by workers than the piece rate plan because the latter, unfortunately, is synonymous in the minds of workers, with bad wage practices.[2]

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 40-41
2. Ibid., p. 41

III. Principles and Problems of Wage Incentive Installation

Selecting the Plan

After a company has decided upon the policy of wage payment based on incentive principles, the next decision involves the selection of which incentive plan to use. Each plan has both its strong and weak points; its advantages and disadvantages. It would be a mistake not to give all the plans proper and serious consideration. Quite naturally those that are obviously unsuited should be eliminated from further consideration at the outset. The needs of the company and workers alike must be considered, and that plan or combination of plans which offers the required balance should determine the choice.

If the incentive application is to be on an individual basis or is to be applied to a group, the members of which receive the same base rates, serious consideration may be given to the installation of the Straight Piece Work Plan. The plan's principal drawback of inflexible money rates then would work little or no hardship. The plan offers simplicity, definiteness and low operating costs. Under these conditions, if the "piece rate" connotation is acceptable to the workers, it would probably be effective. Modern installations of this plan usually follow the practice of guaranteeing minimum wage rates and the maintenance of standards.

The multiple piece rate plans, especially Merrick's, are effective when it is the company's desire to upgrade inefficient workers.[1] Taylor's plan, with its punitive low rate for reduced or faulty work is apt to discourage rather than encourage beginners. The interjection of different rates for varying degrees of production on the same job, tend to make these plans slightly more complex to introduce and maintain than the Straight Piece Work Plan. The gain of greater flexibility at the same time sacrifices a degree of simplicity. Multiple piece rate plans, in their usual application, resort to tables for the explanation and computation of the bonus.[2] Here again the principle of guaranteeing minimum wages and standards is firmly established as being necessary for proper acceptance by the workers.

The constant sharing plan of Halsey is adaptable to applications where the accuracy of the standards is uncertain, and the company feels the need of protection against extremes of very high or very low earnings. The plan is looked upon by some as being advantageous because it encourages beginners by paying a bonus at relatively low production levels.

The Bedaux and other point plans are effective

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1. Lytle, Charles W., Wage Incentive Methods (The Ronald
   Press Company, 1942), p. 60
2. Ibid., p. 60

in companies possessing strong centralized management. While tangible results accrue to companies through the plan's incentive aspect, its provision of a common denominator for the measurement of cost and relative efficiency seem to be its main contribution to production control. Management must pay, however, for the plan's versatility by paying for its greater operating costs. The administration of the plan requires the work of a relatively large clerical force.[1] The plan, in order to be fully utilized, must be applied wherever possible in the company, otherwise its contribution to cost and production control would be incomplete.

Measured Day Work, as an incentive plan, has not proven to be generally successful or popular. The lag between the time when increased base rates are earned and when they are actually paid seems to present an obstacle to its success. While the plan is entirely acceptable to workers whose efficiency is increasing, it becomes unpopular when job performances justify a downward revision of wage rates.

The 100 Per Cent Plan or the Hour-for-Hour Plan lends itself to adaptability either on a group or on an individual basis. It usually calls for the guaranteeing

[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 60

of minimum wages by the company and the maintenance of the established standards for performance. The Hour-for-Hour Plan, while retaining the Straight Piece Work Plan's strong point of paying all of the incentive earnings to the worker, at the same time is freed from the inflexibility of the money piece rates. Expression of worker productivity in terms of efficiency percentages affords a medium of comparison between the productive efforts of various divisions of the company. The plan, therefore, seems to combine the best aspects of the Straight Piece Work Plan and the point plans while eliminating their draw-backs. This plan has the further advantage of offering lower operating costs than the Bedaux plan. The plan is relatively simple and easily understood by the participants.

It is not always feasible to select one plan and then attempt to apply it to all phases of work. Various departments have problems which may present obstacles to the application of plans that have proven successful elsewhere. Oftentime the company's incentive program is served best by studying the needs of each individual group and then applying the plan best suited to each group.[1] However, when it is possible to apply one basic plan equally well to all divisions, administration is simplified. The

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[1] Anderson, Kenneth B., "Incentives and Supplementary Wage Payments," Handbook of Business Administration (McGraw-Hill, 1931), p. 654

productivity of all divisions can be expressed in terms of one common denominator, and the company has available a yardstick by which the relative merit of each group can be measured. C. W. Lytle summarizes the essentials of a good incentive plan as follows:

> 1. It should be just to both employer and employee, increasing the mutuality of their desires. It should be positive, not unnecessarily punitive, and so operated as to promote confidence.
> 2. It should be strong both ways, that is, it should have a standardized task, preferably high, and a generous reward, the latter should usually be in direct proportion to employee effort, preferably more than this for the highest productions.
> 3. It should be unrestricted as to the amount of earning, that is, the rate guaranteed against change until the job is changed.
> 4. It should be reasonably simple for an employee to figure, prompt, and clear in its relation to individual performance, as well as practical for shop procedure. Intelligent employees dislike to see excessive clerical work nearly as much as do employers. The time period over which efficiency is averaged should be short, usually a day.
> 5. It should be flexible and intimately related to other management controls.
> 6. It should be an aid to teamwork and automatically assist supervision.
> 7. It should have the employees support and in no respect be paternalistic.
> 8. It should have full managerial support in the matter of production, material and quality control, maintenance and non-financial incentive.
> 9. It should not be used temporarily in busy seasons and dropped in dull

times as a means of wage reduction.[1]

Basic Requirements of a Sound Incentive Installation

Wage incentive programs, like any enterprise, must of necessity be inaugurated and maintained on a sound basis to enjoy initial and continuing success. In addition to the principles enumerated above there are others which should be given proper consideration. Procedures should be standardized in the department where the installation is to be made. Incentive rates are on a firmer foundation if based on standard procedures with the participants being well trained in the job methods. Standards must be based on definite quality requirements with direct controls being established over waste, or they are liable to bring harm to the company rather than benefit.[2]

Security of income is important in the minds of most workers; therefore, the guaranteeing of base rates is usually looked upon as being essential to a successful wage incentive program.[3] However, in order for the incentive to be effective it is generally conceded that there should be a sufficient spread between the guaranteed base rate and the normal bonus rate to provide incentive to extra

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[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 32-33

[2] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 48

[3] Ibid., p. 46

effort or sustained effort.[1] If the spread is too small, the incentive to produce is lacking. On the other hand if it is too large, the reward for increased output is paid before the production is discernible, thereby resulting in disproportionately higher unit labor costs.

Workers under an incentive plan are apt to feel more secure against unwarranted changes on the part of management if they are provided with definite, written statements of the company's policies in regard to the plan's administration. Instruction booklets which outline the company's policies and methods often prove to be helpful.[2]

Provision should be made in the plan for equitable adjustments to be made by the company when the worker fails to meet the task, and when the cause of the failure is beyond the control of the worker.[3] This gives the worker evidence of the company's fairness and also works to put pressure on those responsible to maintain conditions at the standards upon which the job is based.

Whenever it is practicable, the incentive application should be on an individual basis. When this principle must be deviated from and the installation is made on a group basis, less difficulty will be created if the group is kept as small as possible. If the plan is on an

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 47
2. Ibid., p. 47
3. Ibid., p. 48

individual basis, the incentive is stronger for the more capable individuals to exert themselves because they know that the bonus earnings will accrue to themselves alone. Should they fail to make bonus earnings due to factors that are under their control, they can rightfully blame no one but themselves. Many group installations suffer the handicap of inefficient workers who tend to discourage extra effort on the part of efficient workers. The better workers feel that the rewards will not be proportionate to their own efforts, and the poor producers will benefit by the production of the conscientious workers.[1]

The plan should cover as much of the work in the department as is practicable. Omission of work that can be included tends to demoralize the workers who are performing it because they have no opportunity to increase earnings by increasing their production. However, when an effort is made to cover as many of the different jobs as is possible, consideration and proper emphasis must be given to certain factors such as: quality, waste, spoilage, expenses, supervision, indirect labor, and excess costs of operation in addition to direct labor.

Relationship of Wage Incentives to Rate Structure

Modern incentive applications, which guarantee a

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 46

minimum wage, are designed to reward workers for production over a specified minimum amount. This, of course, assumes the payment of fair rates of pay for production up to the quantity specified.[1] Wage incentives, to be viewed in the proper perspective, are not part of base wage rates. They are not a substitute for differences between low rates paid and the going rates of the community. The base rate is payment for a fair day's work. Wage incentives are the inducement for a better than normal day's work; payment, therefore, should make the total take-home pay greater than that received for normal effort. In the past, and to some extent in the present, companies have employed wage incentives as a means of increasing a man's earnings without changing the base rate for the job when it was considered too low. Misuse of the incentive idea in this manner contributed to the loss of favor for incentives in the past, and practices of this sort, presently practiced, may lead to the ultimate failure of plans that would otherwise succeed. Failure to adjust base rates properly before the introduction of the incentive plan, may work to distort the wage structure of the company.[2]

The incentive plan and base rate structures should be kept separated both in their preparation and

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[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 16

[2] Ibid., p. 16

determination. J. K. Louden in speaking about this problem said,

> If both the rate structure and the incentive plan have been accurately and equitably established, we have the ingredients of a successful and harmonious wage practice and experience. They should inspire confidence and thus gain the trust and support of both supervision and hourly employees.[1]

If an equitable rate structure is absent in a company contemplating the installation of a wage incentive program, proper wage adjustments should be made before the plan is introduced. In order to rate each job in relationship with the other jobs in the company, an adequate plan of job evaluation should be selected, and the method of approach determined. Several key jobs are usually selected to serve as a basis for comparison.[2] Detailed descriptions are prepared for the key jobs and for all the other jobs. The key jobs and then all the other jobs are ranked and evaluated, each in regard to its relationship with the others. The relative value of each job is thus determined. The rates paid for the key jobs are compared with those paid in the industry and in the community. Equitable compensation for the key jobs is established, and subsequently maximum and minimum rates for the other jobs can be determined by comparing their relative worth

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 19
2. Ibid., p. 17

to the company with those of the key jobs.[1] A procedure of this sort assures that each job is paid for according to its requirements of skill, experience, education, responsibility and whatever other factors may be considered important.

Relationship of Wage Incentives to Methods Analysis

Methods analysis, and its objectives of work simplification and job standardization, are concerned with the analysis of work methods in order to determine the best way of performing the task. In theory and in practice there is "one best way" to do every job. Methods analysis is the search for this method. The application of methods analysis or industrial engineering has resulted in immeasurable improvements in production techniques and work simplification in factories and offices alike. It is by the methods analysis, made in advance of the establishment of production standards, that management usually realizes its greatest savings when an incentive plan is undertaken.[2]

The lack of understanding of the principles and potentialities of methods analysis by workers and supervision alike has hindered its recognition and advancement. The shortage of trained engineers and the opposition of

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 18
2. Ibid., p. 20

both management and labor to technological change have presented obstacles to the work simplification concept. Now, however, the real worth of this activity is appreciated more in industry and is being increasingly recognized in the office. Improved educational and training programs, substantiated by definite accomplishments, along with the inclusion of both supervision and workers in the program, have hastened its use and acceptance.[1]

There has been a growing tendency to engineer jobs before placing them on an incentive basis. It has been found that this practice reduces the number of changes of standards due to job improvements after the incentive plan has been installed. Plant managers, and this should also apply to office managers who are desirous of maintaining harmonious employee relationships by paying higher wages while still reducing costs, have found that savings resulting from methods analysis are an important contributing factor toward this goal.[2]

The foundation of any wage incentive plan is the work requirement. This standard is usually based on careful work measurement by time study. Time study analysts correlate the amount of work done with the amount of time taken to perform it. If the work is improperly organ-

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944) p. 20-21
2. Ibid., p. 21

ized because the method of doing the work has not been studied, a certain amount of waste effort and waste motions will be included in the work method.

Time studies taken on jobs which are performed in a variety of ways and with varying amounts of ineffective motions present, offer a very insecure base from which to formulate production standards. Standards established on this basis will force workers who are not able to improve their work patterns to perform all elements of the operations at a higher speed, including those motions which are unnecessary. Practices of this sort in the past led to cries of "speed-up" and worker opposition to incentive plans.[1]

After the operation has been studied, the work simplified as much as possible and the operators thoroughly trained in the new method of doing the work, the time study analyst is in a position to do an effective job. Equitable rates can be determined with some degree of accuracy when he does not have to cope with unnecessary motions and a variety of methods. Thus, establishing the "one best way," teaching the worker how to do the work in the new manner, and then establishing fair production standards which are incorporated into a just incentive plan, provides the worker with the inducement to keep on performing the work

[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 22

in the "one best way." Working on an incentive basis tends to discourage the workers from falling back into old work habits and to encourage the maintenance or betterment of the standard output of work of acceptable quality with a minimum of waste work and material.[1]

J. K. Louden said in relationship to this aspect of wage incentive installation, a good policy is that,

> No standards should be established on an operation for incentive purposes until that operation has been subjected to a study involving the use of these methods improvement techniques and the result of that study placed into effect in a satisfactory manner. 2

Selecting the Unit of Measurement

Measuring the amount of work done by operators can be for the purpose of cost analysis and/or for the determination of the bonus earnings on an incentive plan. In both cases the unit of measurement should be selected carefully in order for it to be fully effective. Accuracy in determining the amount of work done is the primary consideration when deciding which unit of measurement should be used.[3] Since quality, as well as quantity, is an important consideration in incentive applications, it is well

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 22
2. Ibid., p. 23
3. Clark, Wallace, "Measurement of Office Output," Handbook of Business Administration (McGraw-Hill, 1931), p. 883

Figure 9

UNITS OF MEASUREMENT FOR VARIOUS TYPES OF OFFICE WORK

FUNCTION	QUANTITY MEASUREMENT	QUALITY MEASUREMENT
Handling of incoming mail in a Mailing Department		
Slitting envelopes	One envelope	Mutilated envelopes
Remove and date stamp papers	Number of letters or reports	Number not stamped
Sorting	Number of letters or reports	Errors in sorting
Distribution	Delivery stations	Number of misplaced letters
Handling of outgoing mail		
Collections	Number of collection points on each trip	Variations from schedule
Sorting	Letter or report	Errors in sorting
Enclosing outgoing mail	Number of envelopes	Number returned by recipients
Stamping	Number of envelopes	Postage due returns
Dispatching interdepartmental communications	Number handled	Number of misdirections
Messengers outside the office	Number of trips	Time spent on trips
Filing Department functions		
Filing	Number of papers sorted Number of papers filed Number of papers pulled	Inspect files periodically and record number of papers misfiled
Typing of orders or invoices	Number of long invoices Number of short invoices	Inspect and check with adding machine
Cutting stencils	Number of standard lines or names	Inspection and checking
Addressograph		
Making plates	Number of plates	Inspection
Printing	Number of envelopes per hour	Inspection
Duplicating		
Multigraph, Ditto, offset mimeograph, photostat	Set-up time plus number of copies per hour	Number of spoiled or illegible copies
Order Department		
Checking accuracy	Number of orders	Number of errors overlooked
Enter orders on invoice	Number of orders	Number of errors
Extending prices	Number of orders	Number of errors
Checking shipments	Number of orders	Number of items overlooked
Accounting Department		
Posting debits and credits	Number of items posted	Number of mistakes
Auditing invoices	Number of invoices	Number overlooked
Operating calculating or adding machines	Number of forms or folios	Incorrect transmissions to machines
Tabulating machines	Number of forms coded Number of cards punched Number of cards verified Number of cards sorted and filed Number of cards tabulated	Number of errors Number of errors Number of errors Number of errors Number overlooked

Handbook of Business Administration, W. J. Donald, Editor-in-Chief, (McGraw-Hill, 1931), p. 884-887

that a unit measure of accuracy be established along with the unit measure of output. According to Wallace Clark, office work may be divided into four main classes: "1. Handling papers, 2. Correspondence and typing, 3. Clerical and statistical and 4. Accounting," all of which can be accurately measured.[1]

Handling papers includes incoming and outgoing mail, inter-departmental communications, messenger service, and the sorting, filing, and finding of papers. Clark recommends that the unit of measurement for these operations be a sheet of paper or several sheets of paper fastened together and considered as one letter or report. The operations involved in the handling of papers with some other types of office work along with their units of measurement for both quality and output, are contained in the chart facing this page.

Operator Groupings and Time Intervals

Although accurate and precise standards are necessary for the success of any incentive program, the method of using them also contributes or detracts from the success of the program. Standards can measure the production of individuals, small groups, large groups, departments, or

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1. Clark, Wallace, "Measurement of Office Output," Handbook of Business Administration (McGraw-Hill, 1931), p. 883

even major divisions of a large company. The time interval which is used to calculate the performance may be based on the job, the day, or the payroll period which may be weekly, bi-weekly, semi-monthly, or even monthly.[1]

General practice is to base the operator groupings upon the production practices in use. Workers whose productivity is independent of others, with the exception of service personnel, usually are handled best on an individual basis. When work is performed by teams, groups, or lines, the group application is used in which each member shares equally any extra time gained.[2]

When establishing the time interval over which incentive earnings are calculated, consideration should be given to several factors which may vary widely within the industry the company is a part. Where the relationship between production and the time it takes is close, the workday is considered by many as the time period which provides the worker with the greatest inducement and which offers him protection against the loss of bonus that has already been earned whenever he has a poor production day during the week. However, there are times when recording production on a daily basis is made difficult because of incom-

[1] Dunn, Carl T., "Is the Incentive Correct," Incentives For Management And Workers, Production Series Number 161, American Management Association, (1945), p. 24

[2] Ibid., p. 24

plete units at the end of the day. It may be necessary in situations like these to use the job time as the time period.[1]

When the relationship between the time required and the amount produced is not constant, the standard may be based on averages. A sufficienty large time period should be used in standards of this type so that the bonus actually reflects the extra effort and not only just better than average working conditions. When variable conditions such as these are encountered, a week is often selected as being the best time period for the incentive computation.[2]

Establishing the Standard

J. K. Louden stated that the primary purpose of an incentive system is, "to offer a financial incentive for a worker or a group of workers to produce work of an acceptable quality over and above a specified quantity."[3] This "specified quantity" or standard is the keystone of the whole incentive plan. The plan's success or failure depends, in a large degree, upon the fairness and accuracy with which the standards are set and whether or not they

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1. Dunn, Carl T., "Is the Incentive Correct," Incentives For Management And Workers, Production Series Number 161, American Management Association, (1945), p. 25
2. Ibid., p. 25
3. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 13

are guaranteed against unwarranted changes.

In order for the plan to elicit and deserve confidence, each worker must not only know that the standards are fairly established, but also that the task requirements of his job are reasonable in comparison with those of other jobs. He should know that regardless of what job he may be assigned to, he will always find that the new tasks are comparable in their demands on his energy and skill with those of his preceding job. He should be given assurance that the standards will not be changed if conditions do not change regardless of his performance on the job.[1]

The success of the plan requires not only the maintaining of standards but also the rigid maintenance of the specified conditions. Laxity on the part of management in performing its part of the bargain can be as unfair on incentive workers as the unjustifiable changing of standards. Job conditions and standards should remain unchanged unless there are good and just reasons for adjusting them.

The establishment of unchanging standards requires that they be based on facts derived from careful and thoughtful analysis. Incentive plans are jeopardized from the outset if their standards are based on past performance, what other companies are doing, snap judgements or unstudied

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 13

opinions.[1] Although past performance figures may be helpful as a rough check on accurately determined standards, they contain too many variables to provide the actual basis for the standards. Many times it is impossible to evaluate properly the personnel upon whom the production figures are based. Absenteeism, soldiering, and exceptionally inefficient or efficient periods further tend to complicate and distort the figures. Other variables which include such factors as supervision, equipment, working conditions, type of work and methods also contribute to the inadequacy of the figures.

Work is, for the most part, a combination of mental and manual effort with the relative amounts of each varying among different jobs. This effort is expended over a given period of time. Manual work, whether in factory or office, can be measured with considerable accuracy. The results of work then, regardless of the energy expended, determine its value. It is the individual's productivity that greatly measures his worth whether he works for another or for himself.[2] Accomplishment is the result of the application of effort, and since both the intensity and duration of the effort influences the accomplishment, the

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 14
2. Barnes, Ralph M., "Is the Rate of Output Right?," Incentives For Management And Workers, Production Series Number 161, American Management Association, (1945), p. 11

measurement of work done should consider both quantity and time.[1]

Authorities on wage incentives are practically in complete agreement that time study is the only satisfactory method of determining what a standard day's work is. The use of standard data and standard time values, when carefully defined, is also satisfactory if the information has been derived from time studies. The accurate use of standard data to compute time standards offers a technique which requires less time and which is likely to produce more consistent results. Standard data, however, should be used in only those installations where it is economical to compile and validate them.[2] Standard data can be useful to a company in many ways; the following have been advanced by J. Keith Louden:

1. Basis of standards used for establishment of wage incentive plan.
2. Basis of standards used for developing standard costs.
3. Basis of standards used in developing operating budget.
4. Making cost estimates.
5. Data in redesigning plant layouts, process equipment, and products.
6. Basis for the development of standard data for use in all departments and plants.

[1] Barnes, Ralph M., "Is the Rate of Output Right?," Incentives For Management And Workers, Production Series, Number 161, American Management Association, (1945), p. 12

[2] Ibid., p. 12

7. Preparing production schedules and plans.[1]

Standard performance is the amount of work the employer expects in return for the worker's guaranteed wage. When an incentive system is used, the worker receives a bonus which is in direct proportion to his output beyond the established standard.[2] These standards are what a normal worker is expected to do in the performance of his job. The worker, upon whom the standard is set, should possess the normal mental, physical and skill attainments called for by the job. Establishment of the standards should be done on a fair and equitable basis. Excessive exertion and concentration should not be expected, but an average day's output should be required.[3]

Time study procedures have been well standardized for the most part. The operation to be analyzed is broken down to its elements, and these elements are timed with a stopwatch. The pace at which the person worked while being timed is recorded. A representative time is determined for each element. The information recorded in relation to the pace observed by the analyst is used by the time study man

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 24
2. Barnes, Ralph M., "Is the Rate of Output Right?," Incentives For Management And Workers, Production Series Number 161, American Management Association (1945), p. 12
3. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 23

as the basis for his "effort" or "performance" rating. The rating factor is applied against the selected time to obtain the normal time. The normal time thus derived is the time a normal worker, working at a normal speed, should take to do the job. The standard time is computed by adding to the normal time allowances for personal time, rest from fatigue, and, when needed, for delays. The standard time is expressed in terms of quantity and time, usually as minutes per piece or units per hour.[1]

Although time study is looked upon by many as being the most accurate method of determining standards, it too is subject to criticism. While the stopwatch and analyzing techniques can be developed by training, the judgement factor that is necessary to adjust the study to normal conditions is subject to wide variances. It is difficult to maintain normal conditions, and it is almost impossible to select a truly normal worker. It, therefore, becomes necessary for the time study man to grade the performance, either up or down, in order to establish an equitable rate. This ability to judge varies among analysts. Some are lenient, while others are stringent in their interpretations; others are in between. This phase of time study calls for

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1. Barnes, Ralph M., "Is the Rate of Output Right?," Incentives For Management And Workers, Production Series Number 161, American Management Association, (1945), p. 12-13

supervision on the part of management.[1]

It is management's responsibility to select only properly qualified men to be their time study analysts and to see that they receive adequate training. The establishment of rigid procedures and constant training on principles, coupled with the ceaseless checking of one analyst against the other, is necessary to obtain real uniformity of study within the company.[2] Corrective measures should be taken when necessary so that the time study men will set consistent standards.[3]

An established standard should never be subjected to bargaining or negotiating. A standard for the work necessary to perform an operation should be determined as thoroughly and accurately as possible. Subjection to influences that may distort its validity will tend to jeopardize its success.[4]

Standards, to be established both consistently and accurately, must be determined according to tested and accepted procedures. Listed below is a summary of J. K. Louden's requirements for the establishment of accurate

[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., p. 24

[2] Ibid., p. 24

[3] Barnes, Ralph M., "Is the Rate of Output Right?," Incentives For Management And Workers, Production Series Number 161, American Management Association, (1945), p. 13

[4] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 27

work standards:

1. The proper organization of the job based on the findings of thorough and complete motion study.
2. The proper training of the operator in the new method of work.
3. The competence and ability of the engineer making the study.
4. The degree of accuracy attainable under the particular time study procedure and techniques used.
5. The proper and constant maintenance of standards in accordance with changes introduced into the operations.
6. The adherence of new standards as they are developed to the established normal output level to the degree possible, using present methods and techniques. [1]

Quality Control in Incentive Installations

A common objection raised against the introduction of a wage incentive system is that the quality of work will suffer. If quality and material usage factors are not fully considered in developing the plan, this objection can be substantiated. Failure has plagued past installations that have overlooked this consideration. However, adequate provisions against this contingency can be developed.[2] It is necessary to establish quality standards and to make provision for their maintenance before the measuring and recording of any kind of office work is attempted. Failure to make proper provisions may lead to increased production

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 26
2. Ibid., p. 140

at the sacrifice of quality. Accuracy and appearance are the prerequisites of quality in office work.[1]

There are several types of quality control; a few of which are as follows: "(1) Non-financial type of control" is used when quality or waste are not of great importance. Educational and training programs in conjunction with the posting of the workers' accomplishments. "(2) Payment of production incentive earnings on 'good' production only" is enforced by eliminating from count the units that do not meet the quality standards. This type of control is effective when labor cost is the dominant factor. "(3) Payment of production incentive earnings on 'good' production only with salvage time included as work time" is a more restrictive practice than the preceding one. Full production credit is allowed after the unit has been salvaged, re-processed and passed inspection. "(4) Payment of incentive for reduction of waste or conservation of materials" is used where the value of the materials used is relatively high and the worker exercises control over their use. "(5) Payment of incentive on 'good' production only with the failure to meet the established waste standards acting as a penalty" is used to curb waste when production increases under the incentive urge. In this type of control the

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1. Clark, Wallace, "Measurement of Office Output," *Handbook of Business Administration* (McGraw-Hill, 1931), p. 882

major emphasis is on output but where material costs are also fairly high.[1]

Definite standards of accuracy can be developed because errors can be measured and expressed in quantities. The number of errors committed by a worker indicates the extent of his departure from these standards. The standards vary in their stringency, of course, according to the nature of the work and the policy of the company. For example, the standards would be absolute accuracy for the preparation of invoices which are to go to customers. In establishing monthly balances of controlling accounts, errors up to $50 may constitute satisfactory accuracy. In any case the important thing is to have the standard of accuracy written down and thoroughly understood by the workers.[2]

The appearance of work, which consists mainly of neatness and legibility, usually cannot be measured accurately. Standards of appearance are usually defined in written instructions which are as clear as possible. Work is inspected and compared with these standards of appearance by the application of judgement rather than measurement.[3]

The habit of maintaining quality should be en-

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 132-140
2. Clark, Wallace, "Measurement of Office Output," Handbook of Business Administration (McGraw-Hill, 1931), p. 883
3. Ibid., p. 883

grained in the worker before participation in an incentive plan because it is apt to be difficult to change bad work habits after the worker has been once induced to greater production. All workers should be thoroughly trained. The actual work to be done must be explained to the worker so that he is completely impressed with (1) the purpose of the work, (2) the relation of his particular operation with the other work being done, (3) the relative importance of the various aspects of the job and, (4) the method in which it is to be done. The best arrangement of the work place and the necessary operation should be thoroughly taught as well as the best motions needed to perform the work properly. The correct sequence of motions is taught and only then should the habit of speed be developed. Insistence on accuracy must be maintained at all times and so thoroughly engrained that it becomes a habit.

IV. Wage Incentive Installation

Introducing the Plan to the Participants

Successful administration of wage incentive plans depends in no small measure upon the manner in which they are first introduced to the participants. In the formulation, introduction and administration of the plan, it should always be remembered that the financial desire is not the only motivating force in the lives of the workers. Such emotions as self-respect, respect for others, self-expression, justice, social pressure, loss of job or prestige and others should not be overlooked.[1] If proper consideration is not given to these factors, they may well, in time, affect the success of the plan.

As in the methods used to engineer the job and to set the standards, management's procedure when introducing the plan to the worker should work to inspire confidence and enthusiasm in the workers. Group meetings can be held with the participants prior to the installation at which the fundamentals, as well as the working details of the plan, should be carefully and completely explained. If the plan is fairly formulated and is based on accurate and just standards, it should be well received by the workers.

The Liquid Carbonic Corporation has adopted an

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[1] Smith, Elliot B., "Compensation and Incentives," Handbook of Business Administration (McGraw-Hill, 1931), p. 1167

educational program, the primary objective of which is to dissolve the mystery in the minds of workers about time and methods study, rate setting and bonus systems. They use a technique of simple conference programs supplemented by presentation to each worker of a helpful, four page booklet entitled "Aids to Earning a Bonus."[1]

Discussion groups hold monthly meetings with methods men and employee representatives in attendance. The questions of any member can be brought up at these meetings, and they are answered as fully as possible. The subjects of these meetings include rate structures, better methods, time study techniques and related phases of industrial engineering. These meetings are in addition to periodic visits of the time study supervisor to the different work groups to explain things directly to the worker on his job.

The company has found that by explaining the principles of elemental methods study to the workers, an increase in the number of acceptable suggestions has resulted. The explanation of time study technique and rate setting methods has resulted in the complete acceptance by the workers of the company's bonus plan.[2]

Many companies have found it advantageous to

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1. "How Union and Workers 'Bought' Time Study and Bonus," Factory Management and Maintenance (October, 1947), p. 74-75
2. Ibid., p. 75

supply the workers with manuals or sets of rules for the plan when it is inaugurated. Company policy is definitely stated in these manuals, and the duties of management and workers alike are clearly set forth.

If a manual of procedure for the installation is used, it should be so prepared that it contains a clear description of the plan, its policies, controls and standards. The purpose of the plan should be stated, and its scope defined.[1] Illustrations of various earnings often prove helpful as this aspect is one which will interest the workers most.[2] The policy section of the manual should state the company's policy fully and clearly, and all wage incentive plans used by the company would be governed by these policies. Special sections should be included if unusual installations are made.[3] The manual, to be complete, should contain other sections which further explain the plan and its workings to the participants.

A bonus accounting section should be included which shows how production is measured and how the earnings are calculated. The inclusion of several sample bonus calculations tends to make the explanation easier to understand. Supplying the participants with samples of all the

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[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 80

[2] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 130

[3] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 80

forms to be used, and instructing them in the method of completing those which they have to prepare, will expedite the plan's inception. The importance of correct production counts should be demonstrated by showing what accuracy checks are used. The section should also include detailed descriptions of all calculations including the regulations concerning the posting of bonus information. Allowances for various delays should be enumerated, and the plan's provisions for deviations from standard working conditions should be set forth.[1]

A participation section, which defines upon what basis individuals are included under the plan, should be included. The qualifications of the participants would be listed in this section, and their place in the organizational set-up explained. It would also state whether the plan is based on the performances of individuals or groups and the reasons for so establishing it.[2]

A standards section where the standards of the plan are fully supported by detailed data should also be included. It should be so organized and compiled that it can serve as a ready reference to the worker. Each standard should be fully described clearly and concisely. The job covered should be thoroughly described as to what opera-

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 81
2. Ibid., p. 81

tions are included, the materials and equipment used and the quality standards required. Then, if changes from the established methods are necessary, no questions will arise if the rates have to be adjusted to conform with them.[1]

Announcement of the plan's inception date and distribution of the manuals or plan instructions should be followed by a meeting between the participants and proper representatives of management. Employees should be encouraged to express their views freely at this conference. It is easier to overcome objections once they come out in the open. Many times the objections to certain phases are valid, and the time to make corrections is before the plan is started. When the number of workers affected is large, departments or operation groups may be conferred with separately.[2]

The introduction of a wage incentive plan to the workers for the first time is often made easier if intelligent and influential employee leaders are won over and put on the new plan one by one. If these leaders are convinced of the plan's fairness and are able to increase their earnings under it, they will cause their friends to seek the same opportunities. The plan should not be introduced hastily; following a policy of being "slow but sure" will

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 82
2. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 130

most often prove to be the best way.[1]

Making and Keeping Good Employee Relations

The success or failure of the plan, regardless of how well conceived it may be, will also depend upon the effectiveness of the administration of the plan in regard to retaining employee good will.[2] The relationship between good employee relations and wage incentives presents a very complex problem. The history of this relationship in the past does not make very pleasant reading in many cases. It is to be hoped that present and future applications of wage incentives to plants and offices alike will benefit from those unfortunate experiences.

Upon analyzing all the aspects of employee resistance to wage incentives, it is often found that the single greatest element is "fear." Fear is expressed in many ways, most of which are understandable and many of which are justified when past practices are considered. With understanding and patience all these fears can be surmounted and removed. They are, in many instances, unfounded, and their continued presence in any plan is an indictment of management's inability to install, carry on

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[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 130

[2] Sylvester, L. A., "Keeping the Incentive Plan Under Control," Factory Management and Maintenance (June, 1945), p. 100

and interpret the plan in the best possible manner.[1] In outlining the duties of management, J. K. Louden said,

> It should be a fundamental policy that before any work is done, the workers be fully informed of what is to be done, how it is to be done, and the goals sought. Furthermore as each step is taken, it and its results should be fully discussed with them and the progress be made only as fast as the workers can absorb and assimilate it.[2]

In order to combat fear effectively, its pattern and the nature of its expression must be understood. Fear which causes resistance to the introduction of incentive plans is expressed in many ways. Some workers feel that the plan will de-emphasize their jobs to such an extent that their knowledge and skill are no longer valuable. Others feel that their health will be affected because they will have to work at paces which are injurious. Unemployment due to a reduction of the work force is feared by some. Fear that failure to meet the standards every day will result in dismissal is felt by others. Some feel that the whole plan is a "speed-up," and that as soon as production increases, the rates will be cut so that they will be forced to turn out more and more pieces for the same money.[3]

There are four groups that will be responsible for the success or failure of the plan; they are management,

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 29
2. Ibid., p. 29-30
3. Ibid., p. 30-31

supervision, the engineers of the plan, and the plan's participants. Should any of these fail in their duties, the whole plan could collapse.

It is the responsibility of management to have its policies well in hand before the program is inaugurated. Management should be prepared to discuss these policies with the employees before any work is started on the incentive basis. Clear statements outlining management's objectives and motives, will go a long way toward dispelling many of the workers' fears. These statements should include the following subjects: the general objective of the study, job security, dislocation of skill, establishment of work standards, rate cutting, attitudes of supervision and the work of the engineers.[1]

There is generally more than one aspect to the company's objective. Of primary importance to the company is the desire to lower cost and thus improve the company's competitive position by the use of work simplification. Assurance of the company's success will act to protect jobs and earnings to a maximum degree. Careful methods and time studies of each job are contemplated with the objective of formulating a sound incentive plan. Management should assure the workers that they will be fully informed at all

[1] Louden, J. Keith, Wage Incentives (John Wiley and Son, Inc., 1944), p. 30-34

times and will be, in effect, partners in the studies.[1]

In regard to job security, management should assure the participants that no one will be dismissed as a direct or indirect result of the study. In the event it is necessary that some one be released, management should follow the practice of transferring the individual concerned to a job that is as near as possible to his rating at the time of release. Management should promise to keep workers on jobs of comparable skill to the ones they are performing as far as possible, in order to alleviate the fear of their skills being de-emphasized. Whenever it is necessary to transfer workers to jobs of different skill requirements, it is the duty of management to see that the workers are thoroughly trained in the methods of the new job.[2]

Work standards should be fairly set, and the workers informed of how they are established so that they can satisfy themselves that they are just. A channel of appeal should be provided so that errors made in the formulation of the rates can be adjusted. In order to overcome the fear of not being able to meet the standards when they grow older, management should institute and guarantee a program of transferring older or slower workers to jobs more in keeping with their abilities.[3]

1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 31-32
2. Ibid., p. 31
3. Ibid., p. 31

In connection with performance against equitably established standards, it is only fair that consistent under-production cannot be countenanced. Occasional deviations from the standards should be overlooked. Frequent variations in output should be analyzed, and efforts made to help the worker overcome his difficulty either by improving his performance on his present job or by transferring him to a job for which he is better suited. To dispel the fear of rate cutting, management should definitely and clearly guarantee the maintenance of standards. The only justification for adjusting standards should be a change in the standard method of performing the job.

Management should see to it that the supervisors are well trained in all aspects of the plan. The supervisors should be "sold" on the plan to such an extent that their enthusiasm for it is transmitted to the workers. It is the supervisor's duty both to guide and inspire the worker.[1]

Management should carefully select the engineers who will study the problem and install the plan, to be certain they are capable of the important task they are to perform. They should be well trained in every aspect of the work so that they can be depended upon to be thorough

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[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 33

and accurate. The engineers should be friendly, diplomatic and fair in their relations with all concerned in order to inspire and merit the confidence of the workers being studied.[1]

Companies can strengthen their employee relations if they will tend to favor the worker in all decisions which affect him. This, of course, does not advocate paternalism but rather the adoption of a policy of giving him the benefit of the doubt. A worker is at all times in a position inferior to that of management. He is always at the mercy of management's whims. He can be terminated, demoted, censured and buffeted about without recourse on his part. Unless his inferior position can be compensated for by some other means, whether or not management sees fit to exercise its prerogatives, he may acquire a persecution complex of varying intensity which will only magnify the problem.[2]

An incentive plan is essentially dynamic. Conditions vary constantly; sometimes their change is imperceptible, while at other times a problem develops rapidly and demands an instant solution. Many of these problems concern the employees working under the incentive plan. The participation of employees in the solution of problems af-

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 34
2. Lincoln, James F., Lincoln's Incentive System (McGraw-Hill, 1946), p. 152

fecting them has been a moot point for some time. This method of solving mutual difficulties can pay big dividends to both employers and employees if they will discuss the problem intelligently and sincerely, and approach it with open minds.[1]

This relationship should not be embarked upon, however, until both groups are mentally prepared for it. Employees must learn to trust the motives of management and believe in their sincerity if mutual accord is to be attained. They must feel free to state their exact position and not feel that they are ham-strung in any way. Management must rid itself of the feeling that its position endows it with superior knowledge and must recognize the rights of the employees. If both parties recognize that working together is a step toward improved relationships, then there is real hope for success.[2]

The Importance of Wage Administration

Proper and effective wage administration is necessary for the successful operation of the incentive plan. The original principles of paying fair base rates for normal production should be followed. The conditions under which the wage structure is formulated rarely remain static. The program should be sufficiently flexible to provide for

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[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 158

[2] Ibid., p. 159

the expected changes. The incentive plan usually makes provision for the adjustment of rates when changes in the method of performing the work warrant it.[1] The base rate structure likewise should be capable of amendment when changes in job specifications or "market rates" occur. Changes of this sort should also be reflected in the bonus rate for the job if the premium is based on money rates. The procedure to be followed for equitable base rate and bonus rate adjustments should be made clear to the participants at the outset so that should changes be necessary, their validity will not be questioned.

The Importance of Standards Administration

Those entrusted with the administration of the incentive plan should constantly guard against changes in work requirements which are not accompanied by comparable changes in the standards affected. When the work requirement changes in such a manner as to cause the standards to become too "tight," the workers will generally inform management about the condition. The real danger to management arises when work requirements diminish with the result that standards become too "loose."

In the case of planned changes, the jobs affected should be carefully re-studied so that the proper adjust-

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[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 79-80

ments in standards can be made. The reason for the change should be fully explained to the employees affected well in advance of the change.[1] Should re-training of the workers be necessary, that too should be taken care of in advance of the change. If it is necessary to revise the standards either upward or downward as a result of the change, this revision should be made as soon as possible. Failure to correct the standards immediately can prove troublesome. The retention of "tight" standards for an unreasonably long time is apt to cause discontent among the workers.[2] Procrastination in the proper adjustment of "loose" standards may lead to objections from the workers when the change is finally made because they may have forgotten the job changes which justify the revision.

In the event that the work requirements are changed as the result of a suggestion, it is usually not considered a sound practice to retain the old standard as a means of rewarding the worker. Workers should be paid direct rewards of cash for their acceptable suggestions. The standard then should be revised to incorporate the idea and to correspond with the change in work requirements.[3]

Abrupt and noticeable changes can be handled di-

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 82
2. Ibid., p. 83
3. Ibid., p. 83

rectly in the proper manner. Changes that are difficult to handle in an economical manner are the so-called "creeping changes." These constitute small infrequent changes in operation which, if ignored, can have a cumulative effect on the standards. It would be impractical, and virtually impossible, to measure each of these changes and revise the standards accordingly. Many companies face this problem by establishing a yardstick for changes. For example, management may adopt a policy that a change in operations must have an effect of ten per cent or more on the standard to warrant its adjustment. If the change falls below this minimum, it is recorded on a standard sheet, and when sufficient changes have been accumulated to make the ten per cent change, the standard is corrected.[1]

The Supervisor's Responsibility for Incentive Administration

Supervisors are often relieved of some unpleasant duties by the installation of incentive plans because they tend to induce self-discipline on the part of the workers; yet many of the old responsibilities remain with some new ones being added. The responsibilities of the supervisor are many and varied; following are what are considered by some to be the most important:

1. He shares the responsibility of selecting and properly training the worker for his job with the department

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[1] 1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 84

concerned with training.

2. He co-ordinates the functions of the staff representatives making the studies, with those of the line representatives in his department.
3. He sees that proper equipment, materials and work places are provided, and that they are maintained sufficiently well to meet the quality specifications.
4. He works with the methods department to establish the procedures for the job and then makes certain they are followed.
5. He maintains checks on work received from other departments to see that prior processings do not have detrimental effects on his workers.
6. He authorizes all extra work permitted due to off-standard conditions.
7. He investigates and passes on requests for time allowances for off-standard conditions and works with standards representatives to determine the correct allowances.
8. He informs the standards department of changes in conditions and aids in the making of necessary adjustments.
9. He makes certain that all necessary records are sent to the payroll department on time.
10. He aids the time study analysts in determining what constitutes proper allowances for learning time for new workers.
11. He aids in the selection of the operations that are to be included under each group, when the incentive installation is on a group basis.
12. He aids in the selection and training of the group leaders.
13. He aids in the investigation and correction of the causes of failures to meet performance standards.
14. He does all in his power to keep straight time work at a minimum.

15. He cooperates in the maintenance of quality.[1]

The Methods and Standards Department's Responsibility for Incentive Administration

In most offices where the installation of wage incentives is a fairly new concept, the establishment of standards is considered part of the duties of the methods department. Companies that have had incentives in the plant for some time and have only recently extended the concept to the office, usually are already served by a well-trained time study and rate setting department. Engineering of the job is usually done by a separate methods department. Whichever organizational set-up is used, or if other groups are charged with the responsibility of engineering the jobs and maintaining standards, certain responsibilities are inherent with the functions. Following are some of the most important:

1. The application of incentives to operations where performance can be measured directly.
2. The development of a sound system of application, regulation and control for the incentive plan.
3. The maintenance of the standard methods and procedures by constant vigilance.
4. The investigation, authorization and determination of extra time allowances for off-standard conditions.

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[1] Wollam, G. Z. "Responsibility for Incentive Administration," Factory Management and Maintenance (October, 1947), p. 134

5. The adjustment of standards when warranted by changing job conditions.

6. The maintenance of harmonious relationships with workers, supervisors and management while favoring none and being fair to all.

7. The investigation and correction, with the aid of supervision, of consistent failures to meet standards.

8. The establishment of new incentive groups in conjunction with the supervisors involved and the accounting department.

9. The cooperation with supervision in the establishment of learning time schedules.

10. The assistance in the reduction of straight time work to a minimum.

11. The analysis of operations to balance work loads so that work flows smoothly.

12. The review of time studies at the request of employees.

13. The establishment of quality standards and methods of measuring deviations from them.

14. The checking on the maintenance of working conditions and the provision of the necessary supplies. [1]

The Accounting Department's Responsibility for Incentive Administration

An important part of the administration of an incentive plan is the maintenance of accurate production records upon which incentive earnings are based. These and related duties usually are delegated to the accounting department. The main responsibilities of this department are as follows:

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[1] Wollam, G. Z., "Responsibility for Incentive Administration," Factory Management and Maintenance (October, 1947), p. 135-136

1. The maintenance of a capable payroll division.
2. The maintenance of a good attendance control.
3. The calculation of incentive efficiencies and earnings for incentive workers.
4. The maintenance of accurate performance and earnings' records for incentive workers. [1]

The Personnel Department's Responsibility for Incentive Administration

A progressive personnel department can materially assist an incentive program. It is of primary importance that the workers in each group be well suited for their work and well trained to perform it. Following are a few of the responsibilities of the personnel department in a wage incentive program:

1. Aids in the formation of incentive groups.
2. Handles the grievances arising from questions in regard to earnings, standards, inequities, discriminatory acts and others connected with incentive plans.
3. Selects personnel which is properly qualified for the various incentive jobs.
4. Aids in the proper training of personnel. [2]

Following up the Incentive Program

An incentive plan periodically requires careful and thorough follow-ups in order to make sure that it is functioning the way for which is was designed. Ordinarily

1. Wollam, G. Z., "Responsibility for Incentive Administration," Factory Management and Maintenance (October, 1947), p. 136
2. Ibid., p. 137

it is the practice to assign this responsibility to one well-qualified individual, usually the engineer who worked on the plan. He should be supplied with additional help if it is needed to do a thorough job. It is not reasonable to expect that an incentive plan, regardless of how well devised, can be installed and expected to function well without control.[1] The practice of close control prevents minor problems from growing into major ones.

This method of constant checking and control is important from an employee relation standpoint too. Whenever any changes are made, they can be measured immediately and all necessary adjustments put into effect. Prompt and effective action prevents the loose applications of standards which would distort the value of the plan if they were ignored. The engineer should also spend sufficient time with the workers concerned to make sure that they are fully and properly trained in the performance of their jobs. The resultant close cooperation with workers and supervisors provides the engineer with the opportunity to observe work methods closely. By recording his own observations and the recommendations of others, further methods improvements may be developed.[2]

In order for supervision, management and the en-

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 84
2. Ibid., p. 85

gineer in charge to be well advised of the progress of the plan, a system of reports should be instituted. These reports should indicate the production of the department; show the amount of incentive earnings; measure the deviations from the quality standards; indicate the amount of straight time work; show the amount of extra allowances and the reasons for them; list the failures to meet performance standards and their reasons; and explain any changes in methods and/or standards.[1]

The following check-list is advocated by J. K. Louden as containing the most important follow-up items of an incentive program:

1. Make a periodic audit of bonus accounting and procedures.
2. Analyze daily the unsatisfactory or unusual performances above and below the expected bonus percentages.
3. Hold periodic meetings with the supervision to discuss improvements in the installation and other cost reduction plans.
4. Make studies and develop data covering new items not on incentive as well as changes in established methods.
5. Issue all new standards and changes in current standards.
6. Continue development of standard data to improve their accuracy and scope.
7. Make periodic reviews of all standards and allowances against production to check their accuracy.
8. Check effect of a specification, method or equipment change on standards and

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1. Sylvester, L. A., "Keeping the Incentive Plan under Control," Factory Management and Maintenance (June, 1945), p. 101

standard data.
9. Prepare or cause to be prepared progress and performance reports of a control nature.
10. Investigate all proposed new methods and processes designed to improve production and make recommendations concerning them.
11. Maintain a log of all changes and improvements made in the department. [1]

Once an incentive plan has been installed, management is interested in comparing the earnings, production and labor costs under the plan against performances before the plan was installed. The usual procedure is to select an average pre-incentive period to serve as a base period against which the current employee earnings, production and material and labor costs can be compared.

[1] Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 85-87

V. Wage Incentives as Applied to a Central Transcribing Department

One of the most popular adaptations of wage incentives to office work has been the application of this method of wage payment to the work of typing and transcribing. The relative ease with which both production and quality standards can be set has induced many companies, when embarking upon incentive programs to apply an incentive plan to this type of work first. The tendency in larger companies toward the centralization of transcription work has resulted in further applications of wage incentives to transcription from notes, cylinders or discs.

Many companies, in their search for better and more efficient ways of performing their work, have found that the centralization of stenographic work, especially through the use of modern dictating equipment, offers an efficient method of handling correspondence, reports and all other work that requires the use of stenographers. Centralization of this work results in a degree of flexibility that usually cannot be attained under the older method of using individual stenographers. Dictators may, by the use of modern dictating equipment, take care of their correspondence when it is the most convenient for them. Interruptions that are bound to occur in every business office only take the time of one individual instead of

two, if dictating equipment is used. Persons can dictate letters after hours or on week-ends without making it necessary for their stenographers to work overtime.

Another advantage of the centralization of transcription work is the greater utilization of both equipment and personnel. Employees who are performing this work become specialists because they are not called upon to perform other tasks which are unrelated to their work. The flow of work, if properly balanced against the number of operators, is sufficient to keep them occupied all the time with this type of work. Absences have less effect on the organization because they can be absorbed by the group. Where the operators are fully occupied with transcription, their typewriters, transcribing machines and desks are being utilized to the utmost.

The Metropolitan Life Insurance Company's Dictaphone Bureau

Among the first adaptations of wage incentives to office work, was the application to the phonographers in the Dictaphone Bureau of the Metropolitan Life Insurance Company in New York City in the latter part of 1919. Compensation to the operators in the original plan was made on a piece work basis of one-half cent per line.[1] The plan

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[1] Harper, William J., "Extra Incentive Wage Plan-Central Dictaphone Bureau of the Metropolitan Life Insurance Company," Extra Incentive Wage Plans for Office Employees, Executive Series Number 11, American Management Association Bulletin, (1925), p. 8

operated successfully for many years on this basis, but in 1941 was revised with the assistance of representatives from the Dictaphone Corporation to include certain modifications. The highlights of the plan introduced at that time are outlined below.

A. Equipment

1. Acoustic dictating and transcribing machines.
2. Manual typewriters.
3. Cyclometers with 240 to 1 ratio.

B. Working hours

1. 33 3/4 hours per week.
2. Two 5 minute rest periods per day.

C. Standards

1. 1000 lines (6 inch pica) minimum daily requirement.
2. Operators are divided into three classes on the basis of versatility, attitude, seniority, productive ability and accuracy.
    - a. "Fair" operators receive $.xxx per point
    - b. "Good" operators receive $.xxx per point
    - c. "Excellent" operators receive $.xxx per point
3. Work is divided into three classes corresponding to operator ratings. The most difficult work is assigned to the "Excellent" operators, the average work to the "Good" operators and the easy work to the "Fair" operators whenever possible. If there is not enough work of one type to keep the operator occupied, she is assigned work from another category.
4. Operators are guaranteed a basic wage.
5. The number of points produced per week is multiplied by her rate per point. If the amount arrived at in this manner is below her base rate, she is paid the guaranteed rate.
6. Vacations are paid for on the basis of the average earnings of the operator for the previous six months.

D. Quality Control

1. The work of all operators is checked by two checkers.

2. The only penalties charged are for entire letters that have to be retyped because of errors on the part of the operators. The actual count for these letters is deducted from the operator's production. Full credit is given whenever the retyping is caused by errors on the part of the dictators.
3. Retyping is done by copyists.

This department, in 1941, consisted of 114 operators who produced on an average of 38,000 letters per week.[1]

Determining the Unit of Measurement

Unlike many other types of work, transcription of dictation offers several possible methods whereby the amount of work produced by each operator can be measured. Some of these methods are superior to others; they all have disadvantages.

Many companies use physical count methods based on measurement of the work produced by lines or square inches. The standard line of typewritten material is usually interpreted as being six inches for pica and five inches for elite type. In the computation of linage, pre-determined allowances are made for date, heading, salutation, closing and addressing the envelope. An average allowance can be determined by a careful study of the company's correspondence for several weeks. Lines can also be counted by the use of a Leffingwell-Ream scale or a watch line counter. The watch line counter is held in the hand and contains a

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[1] Interview with Mr. C. B. Ashton, Boston Sales Manager of the Dictaphone Corporation, March 17, 1947

wheel which is run along the lines to be counted. The number of inches of production is shown by a scale which is on the face of the instrument. The Leffingwell-Ream scale is a transparent device which, when laid over the typed matter, indicates the number of square inches produced.[1]

Another common method of measuring typing output is by the use of cyclometers. A cyclometer is a small counting device that can be attached to a typewriter to register the number of key-strokes made. Both registration and interpretation of the work produced is expressed as "points." Cyclometers can be purchased with varying ratios; those used most commonly register 1 point for each 10 key depressions. Other cyclometers may be purchased which have ratios of 1 point for every 180 strokes, 1 point for every 240 strokes, or other multiples of 6. The cyclometer method of measuring typing production offers the advantages of being accurate and automatic. It is true, of course, that it also provides the dishonest employee with the opportunity to run up extra points by tapping the keys when there is actually no work in the typewriter. Little is to be gained by this subterfuge because any competent typist can produce points faster by really typing than she can by tapping a key or the space bar with one finger.

There are some companies that have wage incen-

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1. Methods of Compensating Ediphone Operators, Ediphone Division, Thomas A. Edison, Inc., (1934), p. 2

tive plans applied to transcribing work which use the number of letters, pages produced or the amount of cylinders transcribed as the unit of production. Measurement of this sort is apt to be inaccurate. In the normal course of producing letters or reports, it is usually found that the amount of typed material varies from page to page. However, an average of sorts can be established for certain types of work, and occasionally satisfactory measurement can be made by this method. Counting the number of cylinders transcribed is considered by most authorities to be the least satisfactory production count. There are two main objections to this means of measurement. First, it is unusual for the surface of every cylinder that is sent to the transcribing department to be fully utilized; therefore, some cylinders contain more work than others. Second, it is a fact that there is a variation in the amount of dictation placed on cylinders by different dictators. Most dictating machines run at a constant speed. Consequently, a full cylinder from an individual who dictates slowly contains less work than the full cylinder of the fast talking dictator. This method of measurement is the simplest, but it is also the least accurate.[1]

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1. Measuring Stenographic Transcribing and Typing Efficiency, Policyholders Service Bureau, Group Insurance Division, Metropolitan Life Insurance Company, p. 2

The Employers' Group Premium Plan for Transcribing Machine Operators

The Employers' Group of insurance companies consisting of The Employers' Liability Assurance Corporation, Limited, The American Employers' Insurance Company and The Employers' Fire Insurance Company, first instituted an incentive plan for transcribing machine operators in 1931. It has been the policy of the Companies for many years to supply dictating machines to all individuals who have need for them. The dictation of these individuals is transcribed in a central transcribing department. At present the work of about 200 Home Office dictating machines is handled in this manner. Where many of these machines are shared by more than one person, the actual number of individuals serviced is much greater.

The plan, when first established, was based on the use of acoustic dictating machines and manual typewriters. The work week was 39 hours with two 10 minute rest periods per day. All work was divided into two categories. "Claim" work consisted of claim reports dictated by the Companies' claim adjusters. This work, though apt to be technical at times, was considered easier than the other class because where the information was for the Company files, the quality standards were not so high. The other category was called "General" and included all other types of work except "Claim" work.

All work produced by the transcribing machine operators was measured by cyclometers with ratios of 240 strokes to 1 point. All operators were guaranteed a base rate, and bonus was paid for production over the minimum requirements established for each class of work. The minimum requirement for "Claim" work was 1080 points per week, and the minimum requirement for "General" work was 900 points per week. A bonus, expressed in terms of money, was paid for production over the established weekly minimum requirements. Different rates were paid for the two classifications with the rate for "Claim" work being the lower. Failure of an operator to meet the requirement did not carry over into the next week.

In August of 1935, electric typewriters were made standard equipment for the transcribing machine operators. Based on past experience, the minimum requirements for the operators were adjusted because the new typewriters were considered to offer the means of increasing production without a proportionate increase in effort on the part of the operators. The new minimum requirements then became 1000 points for "General" work and 1200 points for "Claim" work.

In 1941 cyclometers with different ratios were installed. The ratio of the new counters was 10 to 1, and, therefore, the minimum requirements were changed so that

they could be interpreted in terms of the new cyclometer ratio. The actual work requirement, however, was not changed. The requirement, when expressed in terms of the new ratio, became 24,000 points per week for "General" work and 28,800 for "Claim" work. The bonus paid per premium point was also changed to correspond with the new ratio, but its relative value remained the same.

The bonus plan operated successfully on this basis until 1938 when it began to deteriorate, and in September 1944 it was discontinued. The production of the participants fell steadily for a considerable time before the plan was dropped. It is more than likely that the failure to adjust the bonus rate in the light of the steadily increasing base rates of the period, made the marginal utility of the premium seem less and less to the operators. The operators themselves called for the plan's discontinuance.

From September of 1944 until July of 1947 the central transcribing department operated on a straight salary basis. During this time, despite constant increases in wages, it was found that the average production of each operator declined. Absenteeism increased, and a greater turn-over of operators was also observed. It was necessary for the department to add more operators to keep up with the work. Average operator production decreased 41.9

per cent during the period while the cost per line of transcription mounted steadily.

A survey of the department was undertaken, and after changes in layout and scheduling of work were made, the re-adoption of an incentive plan for the operators was proposed. The survey revealed that the production decrease was not all attributable to the operators. It was found that many of the dictators had practices which made the transcription of their work needlessly difficult. As a result an illustrated booklet entitled "Ediphone Etiquette" was prepared in an attempt to get some of these facts across to the dictators in a nice way. Attempts had been made at other times by means of bulletins to bring these points to the attention of the dictators. They were usually just glanced at and then relegated to the waste basket. It was proved that more attention was paid the points in question when they were presented in an interesting manner.

It was also found at the outset of the survey that the manual of instructions used by the typists was out of date. Several people collaborated in revising it, and a new and up-to-date manual of instruction entitled the "Typists' Manual" was distributed to all typists in the Companies. This manual outlines the requirements for the Companies' correspondence, and is the standard against which the quality of work produced under the Premium Plan is

measured.

Management approved the making of a study preparatory to a re-introduction of an incentive plan. The study was conducted by the Methods and Planning Department with valuable assistance from representatives of the Thomas A. Edison Company and the Supervisor of the transcribing department.

In order to establish standards for the plan, a production count was made of all the operators for a period of forty days. During this time the operators complied with the request that they turn in copies of all work transcribed during the day, at the end of each day. They were also asked to turn in all "waste work," that is, work of an unacceptable nature, so that the production of acceptable work could be determined for each operator. While this work was being collected from each operator, the department's Supervisor kept an account of time lost by the operators so that production could be correlated with time. Although the use of time study was considered, it was felt that where this was to be the only application of wage incentives for the time being, and where years of previous records were available for consultation, the minimum requirement could be ascertained accurately enought without it.

After the production count was made for each operator, the work of all operators was reviewed and clas-

sified. The work of 39 departments was classified as being easy, average or difficult. It was found that the work of 6 of the departments could be called easy. One of these 6 departments, however, contributed 45 per cent of all the work done in the transcribing department. The work of 25 of the departments was considered to be in the average class, and the work from the remaining 8 was considered to be difficult. The classification of this work was based on the content of the work and also upon the quality requirements for the different types of work.

The participants also were classified according to their various abilities to correspond with the work classification. Under the plan each class of operator has its own maximum and minimum wage rate. The base rates received by the operators at the plan's inauguration were guaranteed; some were advanced, but none were lowered. Progression by the lower rated operators to the higher classifications depends upon their attitudes as well as productive ability. The assignment of work is governed by an operator's classification, and deviations are made only when necessary for the best interests of the Companies. Each operator keeps her own daily production record which is turned in to the Supervisor at the end of the day along with any "waste work." The Supervisor makes deductions on the daily production report for errors which are chargeable to the

Figure 10
TRANSCRIBING PREMIUM PRODUCTION RECORD

Signature____ Date____________19___

Cyl.	Dept.	CYCLOMETER RDG		Gross Points	ADDITIONS			DEDUCTIONS		Net Pts.	Lines
		Start	Finish		Mins.	Pts.	Reason	Pts.	Reason		
____ Total Cyl.		Total Gross Pts.____			____	____ Total Added Points		____ Deducted Pts.	Net Pts. ____		____

operator.

The rules of the plan were reproduced and distributed to the participants one week prior to the plan's inception. A transmittal memorandum from the executive in charge of the transcribing department accompanied the rules. The rules were reproduced on paper similar to that used for the typists' manuals. The paper was also punched to facilitate its insertion into the operators' manuals and thus be available for ready reference. Each participant's copy of the rules also included a sample of the daily production record to be kept by each operator. (See exhibit opposite this page.) The plan, as it was submitted to the participants is included below. The only deletions are those concerning base rates and the premium rate.

Each operator is depended upon to keep her own production records. Periodic checks of the cyclometers are made to make sure they are functioning properly. The production sheet of each operator is collected at the end of the day along with her "waste work." The deductions for "waste work" are computed by the Supervisor by line count interpreted into points. When an operator is required to do work other than transcribing, the Supervisor keeps track of the time so spent. An allowance based on the operator's average production for the previous three weeks is computed for the time involved. The time, the allowed points and

Figure 11

THE EMPLOYERS' GROUP

PREMIUM PLAN FOR TRANSCRIBING MACHINE OPERATORS

July 14, 1947

The Company has instituted this Premium Plan for Transcribing Machine Operators to provide an opportunity to increase earnings by increasing production. Naturally it is expected that quality, which meets the established standards of the Company, be maintained at all times.

Provision has been made in the plan so that productive ability is not the only basis for earnings. Equitable and progressive base rates have been established in awareness of attributes that cannot be measured in terms of production alone. In recognition of the faithful service of all present Operators it has been decided that present salaries are to be the base rates.

Considerable time and careful study have gone into the formulation of this plan with the desire that it be as fair as possible for all concerned. It is the sincere hope of the Company that all Operators will apply themselves in order to take advantage of this opportunity to increase their earnings over those received at present.

The rules under which the plan is administered are outlined below. Questions in regard to their interpretation should be directed to your Supervisor who will be glad to answer them.

Eligibility

1. Eligibility for participation in the Premium Plan is determined by the Supervisor. Neatness and accuracy of work produced is taken into consideration as well as productive ability.

Equipment

2. The Premium Plan is based on the use of electric typewriters and acoustic dictating and transcribing machines.

3. It is the responsibility of the Company to maintain all necessary equipment in good working order and to provide sufficient quantities of essential materials.

4. It is the responsibility of the Operators to take proper care of the equipment and to call immediate attention to improperly functioning equipment so that it may be serviced as soon as possible. It is readily apparent that poorly functioning equipment will hinder production.

Work Week

5. The Premium Plan is based on a normal work week of 38 3/4 hours.

6. Whenever it is necessary for the Company to change the hours worked per week, equitable adjustment in the minimum point requirement will be made.

7. As allowance for fatigue was made in the establishment of the minimum point requirement, Operators are urged to take two 10 minutes rest periods daily, one in the morning and one in the afternoon.

Base Rates

8. The base rate is compensation for the transcription of 25,000 points per week (38 3/4 hours).

9. Normal base rates range from [redacted] to [redacted] per week with an intermediate step of [redacted].

10. Advances in base rates are made in recognition of service, loyalty, integrity and other attributes, as well as the ability to transcribe more difficult types of work.

11. All advances to base rates of [redacted] and [redacted] per week are made on the recommendation of the Supervisor and the approval of the Salaries Committee.

12. Present salaries are the base rates for all Operators. Advances in base rate, however, will fall within the normal base rates range.

Premium Earnings

13. A Premium of $.[redacted] per cyclometer point will be paid for each point produced in excess of the required minimum of 25,000 points per 38 3/4 hour week.

14. Premium earnings are paid bi-weekly, by check, on Wednesday or, in the event of a holiday on this day, on Tuesday for Premium earned for the prior two weeks.

Overtime Work

15. All overtime work must be authorized by and receive the approval of the Supervisor.

16. Time and one-half will be paid for overtime, namely, hours worked in excess of 38 3/4 hours per week. Payment is based on the average hourly earnings for the week in which the overtime is worked. The average hourly earnings are one-fortieth of the total of the weekly base salary and the Premium earnings, if any, for the week (38 3/4 hours) in which the overtime is incurred.

Measurement of Production

17. Production is measured by cyclometer points. The cyclometers register one point for every 10 strokes on the typewriters.

18. The operators are responsible for keeping their own daily production records. (A sample form is attached). As these reports are the basis on which individual production is computed it is apparent that they must be kept accurately.

Quality of Work

19. All work produced is to be of acceptable quality as outlined by the standards established in the "Typists' Manual."

20. Work that has to be re-typed because of errors on the part of the dictators is to be included as part of the daily production.

21. Work that has to be re-typed because of errors on the part of the Operators is to be deducted from the daily production record in the amount of the points involved.

22. All "waste work" is to be turned in daily to the Supervisor along with the daily production record.

Classes of Work

23. All work is divided into three classes as follows: difficult, Class 1; average, Class 2; standard, Class 3.

24. The classification of work is as follows:

Class 1 - Advertising
Aviation
Executive
Fidelity
H. O. Engineering
N. E. Engineering
Steam Boiler
Surety

Class 2 - Agency
Agency Relations
Analysis
Automobile
Budget
Burglary & P. G.
Comp. & Liability
Education
Fire-Automobile
Fire-Boston and Metropolitan
Fire-Claim
Fire-Supply
Fire Underwriting
H. O. Payroll Audit
Methods & Planning
N. E. Inland Marine
N. E. Payroll Audit
N. E. Underwriting
Personal Accident
Personnel
Public Relations
Reinsurance
Special Risks
Supply
U. S. Claim

Class 3 - Accounts Forms
Actuarial N. E. Claim
Fire Accounts Statistical

Assignment of Work

25. Class 1 work is assigned to Class 1 Operators ($[redacted] per week). Overflow work is assigned to Class 2 Operators.

26. Class 2 work is assigned to Class 2 Operators ($[redacted] per week). Overflow work is assigned to Class 1 Operators who are not fully occupied with Class 1 work, otherwise to Class 3 Operators.

27. Class 3 work is assigned to Class 3 Operators ($[redacted] per week). Overflow work is assigned to Class 2 Operators who are not fully occupied with Class 2 work.

Work Other Than Transcribing

28. When it is necessary that operators do work other than transcribing, the time involved will be credited on the basis of the average number of points produced during the previous three weeks.

Vacations

29. Vacations are paid on a basis of average earnings (base rate plus Premium earnings) during the previous three months. Since the Premium Plan is being started during the vacation period, vacation pay for 1947 will be equal to the base rates, which are the present salaries.

Holidays

30. During a week which includes a holiday within the working period, the minimum point requirement is reduced by the number of points involved (5,000 points per day).

Earned Days and Service Days

31. During a week in which time off for Earned Day or Service Day time is approved by the Supervisor, the minimum point requirement is reduced by the number of points involved (5,000 points per day).

Absence

32. No allowance is made for idle time or absence except for vacation periods, holidays, Earned Days or Service Days.

AP:MR

TRANSCRIBING PRODUCTION RECORD----WEEK ENDING

																	OVERTIME			
DATE							Allowed Points	Total Points	Adjusted Requ	Premium Points	Premium	Base Rate	Prem.& B.Rate	Av.Engs Allowed	Total Cyls.	Lines	Hours	Av.Hrly Engs.	O.T. Rate	O.T. Pay
TOTALS																				

Approved ______________________________

the reason for the allowance are entered on the production sheet by the Supervisor. The gross points as indicated by the cyclometer, plus any additions and minus any deductions equal the new points upon which the premium computation is made. When an operator transcribes the work of more than one department in a day, the production for each is indicated separately on the production record.

The expense of the transcribing function of the department is apportioned among the departments utilizing the service. The allocation of expense is determined by the usage made of the transcribing department. A record is kept of the lines of transcription produced for each department, and each department's percentage of the total production is computed. These percentages are applied against the cost of transcription for all departments to determine the cost to each department.

As it is necessary that the Payroll Division be notified each week of individual operator production, a weekly production record is kept on which the daily net production of each operator is posted. (See exhibit opposite this page.) Each operator's production in excess of 25,000 points in a normal week is multiplied by the premium rate to determine the premium earnings for the week. In the event the minimum requirement is adjusted in compliance with the rules of the plan, the adjusted requirement

for the operator involved is entered in the appropriate column. Premium earnings for these operators are the excess of net production over the adjusted requirement.

This weekly record is prepared in duplicate. The original is sent to the Payroll Division and the duplicate is retained in the transcribing department. The transcribing department's copy is used to measure the progress of the department and the individual operators. The Payroll Division's copy is used as the basis for the computation of premium earnings and is retained as an earnings' record. The sheet also has a section for the computation of overtime earnings. The Supervisor fills in the overtime hours, and payment is made in compliance with the plan's rule covering this aspect.

Results of the Plan

A review of the installation after six months of operation reveals some interesting developments. From all apparent indications the plan is successful. The success of any incentive plan depends upon the cooperation of all concerned, principally the participants and supervision. In this installation the operators have cooperated remarkably well as has the supervisor. The most important results of the plan concern earnings, space, service, production and cost; all factors being inter-related.

Prior to the installation of the plan 29 tran-

scribers, 6 copyists, 2 messengers, 1 assistant supervisor and 1 supervisor occupied space that formerly held little more than half this number. Space in the whole building was at a premium, and the possibility of the department's acquiring more was negligible. The increased production that resulted from the Premium Plan alleviated this crowded condition because some of the employees were transferred to other departments.

Before the re-introduction of the plan, the transcribing department was the butt of many complaints, it being said that the service was not up to standard because the work was not processed quickly enough. After the plan had been in operation for a while, the number of complaints diminished appreciably, and the work flowed in and out of the department more smoothly and quickly.

The production of the department as a whole is governed by the amount of work received. While the average total number of lines produced per week under the Premium Plan varied little from that produced in the pre-incentive period, it was accomplished with fewer personnel. The average number of points per day per operator for the first six months of the plan was 4,787 as compared to 3,669 prior to the plan. The average number of lines per week per operator jumped from 3,055 to 3,989. The average operator production increase under the plan was 30.5 per cent.

Figure 13

EARNINGS COMPARISON

OPERATOR	WEEKLY AVERAGE	
	PRE-INCENTIVE *	INCENTIVE * (6 Months Average)
1	85.2	89.4
2	85.5	85.7
3	85.5	86.2
4	85.5	91.6
5	89.0	93.1
6	91.8	94.4
7	91.8	116.5
8	94.2	94.2
9	94.9	97.0
10	101.4	102.0
11	103.4	103.9
12	108.3	119.2
13	109.1	115.6
14	110.8	122.0
15	116.9	132.3
16	121.4	161.5
17	125.0	138.5
AVERAGE	100.0	108.4

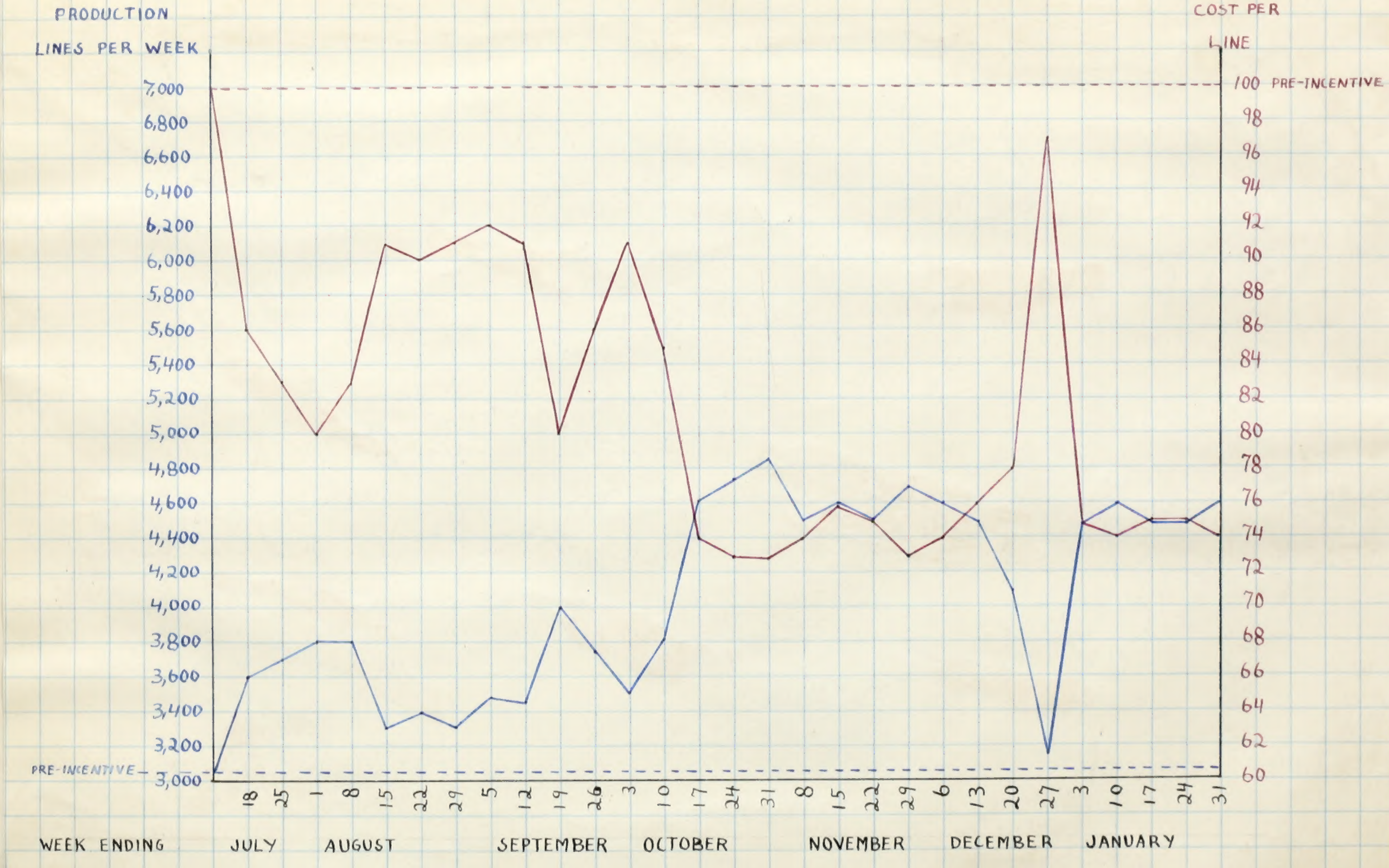
* 100 = average pre-incentive weekly wage of all operators.

The increased production has resulted in greater earnings for the participants and lowered cost for the Companies. Average operator earnings for the six months under the plan were 8.4 per cent above the pre-incentive level, and this includes an adjustment period at the plan's outset when the premium earnings were relatively small. The table facing this page illustrates the earnings comparison for the 17 operators on the plan. The plan shows steady progress. The cost per line to the company has reduced as production has increased and average earnings climbed. The chart following this page indicates the production and cost picture prior and subsequent to the plan's adoption. It will be noticed that production has been above and cost per line below the pre-incentive period at all times with the exception of the Christmas season when operator absence was exceptionally high.

As a result of the Premium Plan's success in the Home Office of the Companies, it has been extended to one of the larger branch offices. From all indications it has been as well received in the branch office and is proving mutually beneficial to participants and Company alike.

Figure 14

AVERAGE OPERATOR PRODUCTION AND COST COMPARISON



VI. Wage Incentives as Applied to a Tabulating Department

The Punched Card System

The control of mechanical operations by the use of punched cards was started at the beginning of the 19th century by J. M. Jacquard. He invented a loom on which a particular pattern could be reproduced by means of a series of cards. These cards controlled the weaving by holes punched to represent the desired pattern.[1]

Charles Babbage, who was financed by the British Government, is credited with being the first one to apply punched cards to the determination of arithmetical calculations. The first machine of this type was developed about 1823. George Scheutz, a Stockholm printer, completed a tabulating machine in 1840 which, although operating on a different principle than that discovered by Babbage, functioned successfully. Successive developments by Herman Hollerith around 1880, John K. Gore in the 90's, J. Royden Pierce between 1910 and 1911, and the cooperative efforts of James Powers and William W. Lasker around 1913, further improved the system. This period saw the introduction of the tabulator, automatic card feed punch, sorter, card punching, printing tabulator, and other devices which were

1. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 2

to make the method more adaptable to accounting and statistical work.[1]

Today the punched card system is accepted by more and more concerns as being the most efficient method of performing certain necessary arithmetical computations. Many companies believe the system to be well adapted to only certain kinds of work, preferring other methods for other types. However, a few companies have adapted the system to so many different uses that Allen Morgenson, upon completing a visit to the huge tabulating installation of a large airplane manufacturer, made the remark that he did not know whether their main product was airplanes or punched cards.

The punched card system requires little change from accepted accounting and statistical procedures. It is the method of obtaining the results that usually differs from other means. This procedure is one of recording and analyzing accounting and statistical data by means of cards into which holes have been punched in a number of pre-determined positions. These holes represent pertinent facts which have been transcribed from the original documents. After the data has been recorded on the punch cards, the original documents do not have to be used any longer as a

[1] American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 3-8

posting medium. The cards have more flexibility than other methods because they can, by different arrangements, be used for the preparation of various records.[1]

Punch Card Equipment

There are three main types of equipment used in the system. The punching machines are used to perforate or "write" the data on the cards. The cards are arranged in the proper working order by sorting machines which use the punched holes as the means to actuate the devices that make the proper selections. The tabulating machines produce the desired final results consisting of records, reports, listings and detailed totallings of the information contained on the cards.

In order to justify the cost of these installations it is generally considered that the cards should be utilized for several things. This is usually true because the cost of punching and verifying the cards often represents a considerable part of the entire cost of the installation.

The machines which are used to produce the punched cards consist of two types; manually operated punches and automatically operated punches. Since the man-

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1. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 8-9

ually operated punches are operated by the manual depression of keys, they are commonly called "Key Punches." While some of these machines have automatic features such as card feeding and card duplicating, they are still operated by manual means. The automatically operated machines include reproducing punches, summary punches, gang punches and multiplying punches. These machines are not key operated and are not normally used to create detail cards from original documents.[1]

The Measurement of Key Punch Production

Where most of the other operations under a punch card system are machine paced, the first application of wage incentives to this type of work is usually to the key punching operation. It is this phase where the human element has to be contended with the most; output being governed solely by the operator's inclinations.

Production is usually measured by the number of cards punched, if each requires the same amount of effort. The amount of work often varies among different types of cards, and the following factors should be taken into consideration before measurement is made:

Number of columns to be punched.
Number of columns that can be repeat

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[1] American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 31-34

punched or duplicated automatically.
Number of cards within each group having repetitive data.
Amount of coding that must be done by the operator.
Type of punch used (especially with respect to automatic feeding, ejecting and stacking of cards).
Arrangement of the original document (especially with respect to the sequence of the data to be punched).
Legibility of the original documents.
Efficiency of the operators (with respect to method of operation and incentive).
Office accomodations. [1]

Various tests have been conducted based on actual operator and machine speeds. Examination of their results is useful as an indication of what can be expected. It has been found that an operator can make from 3 to 6 key strokes per second when punching from legible, well-arranged documents. Repeat punching from master cards on a machine with direct action, was performed at a speed between 10 and 12 strokes per second. On a punch without automatic feed, it required between 3 and 5 seconds to remove the punched card and insert the unpunched card, including the time required to turn to the next document. Changing of the original document, and feeding and ejecting cards with a punch equipped with an automatic feed, was performed in from 1 to 2 seconds.[2]

1. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 52
2. Ibid., p. 53

There are various ways of measuring the output of key punches. One method is the measurement of production by the use of card counters which perform the task automatically. These counters are attached to the punches and can also be used as a check in the preparation of prepunched cards.[1] The number of key strokes can be counted, if it is desired to measure production in this way, by the attachment of counters similar to those used to measure typing production. The number of cards produced can also be measured by weight, i.e., so many cards to the pound, or by the use of gauges or rulers that interpret the number of cards to the inch.[2]

Quality Control over Key Punching

When carefully trained operators have been put on this operation, it has been found that although the punching of cards was done at high speed, the number of errors made was surprisingly few. Accuracy on the part of the operators should be developed first before any emphasis is made on speed. Once good work habits are cultivated in a worker, they are usually not easily discarded.[3]

1. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 54
2. Manual of Practical Office Short Cuts, National Office Management Association, (McGraw-Hill, 1947), p. 219
3. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 69

The accuracy of work performed under a punch card system is determined either by visual or mechanical verification. Visual verification can be performed in the following ways: reading the punched holes, checking from tabulated lists, checking from printed or interpreted cards, checking with two sets of cards or checking repetitive data.

Mechanical verification is performed with one of the three following machines: the direct action verifier, which operates similar to the key punch; the pre-set-up verifier which second punches the cards and enlarges the hole previously punched; and the automatic verifier which indicates cards incorrectly punched after they have been verified by the pre-set-up verifier.[1]

The Application of Wage Incentives to Key Punching by the Hood Rubber Company [2]

The Hood Rubber Company, manufacturer of approximately 4,000 different rubber products in Watertown, Massachusetts, applied wage incentive principles to its factory work in the middle 1920's. The plan, when first applied, was the Bedaux system. The original plan was modified in 1930 and has been operating under the revised set-up since.

Under the original plan, as was proposed by

1. American Office Machines Research Service Volume I, Office Machines Research, Inc., (1940), Section 1.2, p. 74-78
2. Interview at the Hood Rubber Company with Mr. Arthur B. Porter, Office Manager, on February 13, 1948

Bedaux, the workers received only part of the bonus earned, and the remainder was applied against the operating costs of the system and toward the supervisors' bonus. As the plan progressed, the officials of the Company found injustices were being worked. It was the practice of management whenever a new product was being produced, to select the most capable supervisors to be put in charge of the departments affected by the change. In an industry of this type, where seasonal and style changes cause an endless parade of new products, it was necessary for the Company to keep moving the best supervisors to the various trouble spots. As the supervisors' bonus depended upon the showing of their departments, it was found that less capable supervisors with smoothly running departments were receiving substantial bonuses, while the capable supervisors, who were beset constantly with production problems, were not. The end result was that the best supervisors were actually being penalized for their ability. In 1930 it was decided to discontinue the supervisory bonus, and at the same time it was decided to give 100 per cent of the bonus earnings to the workers.

The Hood Rubber Company employs a total of about 7,000 people, 6,000 of whom are production workers. Of the approximately 1,000 administrative, supervisory and clerical workers, about 800 are clerical workers. Of the clerical force, 500 are office clerks and 300 are factory clerks.

The Company applied wage incentive principles to office work in the early 1930's, and now 200 are included under the plan.

Clerical workers on an incentive basis work under the same general plan as it has been applied to the factory. That is, the standard is based on a 60 point hour, and performance over this standard entitles the worker to bonus earnings equal to 100 per cent of the efficiency percentage. While the factory workers are organized under the A. F. of L. Rubber Workers' Union, the office workers are unorganized. The Company makes it a practice, however, to pass along to the office workers, any gains that the Union may derive.

All work, office and factory alike, is engineered for the methods to be used prior to the establishment of standards. Once the standard method of doing the job has been determined, and the operator to be studied properly trained in it, time studies are taken to determine the time values upon which the rates are set. The standards for both the office and factory are set by the Standards Department which comes under the jurisdiction of the Industrial Relations Department.

In addition to key punching in the Tabulating Department, the Hood Rubber Company has also applied wage incentive to the Central Service Department, which handles

transcription from cylinders, copy typing, addressograph and duplicating work; the Payroll Figuration Department, which will be discussed in more detail in Chapter VIII; the Planning and Scheduling Department; and the Billing Department.

The production of the key punch operators is measured by a count of the number of cards each operator produces. This method of determining production is sufficiently accurate for the Company because the same number of holes is punched in each card. Should the number of holes vary, the Company plans to use a counting device.

At present between two and three key punch operators are on the incentive plan. The operators are engaged solely with the factory payroll cards. The production of this relatively small number of operators is very good. There are 6,000 factory workers and approximately 10 cards must be punched for each worker each week; therefore, these operators produce a total of 60,000 cards per normal 5 day work week.

The Company has adopted the policy of not penalizing the operators for errors committed. However, should an operator be a chronic offender in this respect, she is dismissed. As a check on the manner in which the work is being performed, reports are required on the number of errors committed. Verifiers are not used, and the only

check made is a comparison of the tabulated totals with the totals previously arrived at by the Payroll Figuration Department. Management has found by past experience that there is a definite correlation between accuracy and speed. Fast, well-trained operators invariably have the highest accuracy ratings. The average number of errors committed under the incentive plan varies between 30 and 40 each week. Considering the output of approximately 60,000 cards a week, this represents an almost negligible percentage of the total production.

Despite the high accuracy rating of the operators, they manage to produce at a high rate too. Average operator production is at the rate of a 90 point hour. Where the standard is a 60 point hour, the operators are then producing at a rate that is 50 per cent above the standard set for the job. The successful adaptation of an incentive plan to this, and other types of office work, has caused the Company to search for further applications.

Consideration has been given, from time to time, to the extension of the system to some of the other punch card operations. The fact that most of these operations are governed by a rigid schedule and are machine paced, has deterred extension of the plan to the sorting and tabulating functions. The Company also works on the principle that the supervisor concerned must be sold on the idea of

applying a wage incentive system to the work under his supervision before the plan is introduced. It is considered to be a short-sighted practice to force a wage incentive plan upon supervisors who are not thoroughly convinced it is the best thing to do.

The Company administers the clerical as well as the factory incentive installations on a basis of clear-cut, well established principles. Although the employees are not furnished manuals or duplicated copies of incentive rules and policies, supervisors are provided with definite instructions that are to be followed in the administration of the plan. These rules, in turn, are made known to the workers by the supervisors. Factory workers are provided with pocket-sized reproductions of the Union-Company Agreement when they are first employed. This booklet contains references to the plan and indicates the provisions that will be made in the event of transfers, dismissals, absences, holiday pay, establishment of standards and other factors which affect the plan.[1]

Similar rights are extended to the clerical workers on the incentive plan. There have been adjustments between the two types of work, however, because of differences occasioned by the nature of the jobs. Clerical work-

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[1] Hood Rubber Company Agreement with Rubber Workers' Union Federal Local No. 21914, A.F. of L., April 28, 1947

ers are paid for holidays on the basis of their average straight time earnings for the previous four weeks. Factory workers, as is the custom in most manufacturing concerns, are not paid for certain holidays which are not worked.

Vacation pay for factory workers is made on the basis of two per cent of the employee's earnings for the year for each week of vacation. Clerical incentive workers are paid for vacations on the basis of average earnings for the four weeks preceding the vacation period.

Payment for approved absences for clerical incentive workers is made on the basis of average straight-time hourly earnings for the previous four weeks. In no event, however, is payment made in excess of the earnings made over a 70 point hour. Factory workers do not receive any pay for absences, approved or otherwise, except for accidents or injuries covered by Workmen's Compensation.

On the whole, the Company has found that the wage incentive plan has been well received and has worked out successfully in all its applications to clerical work. Worker earnings have been good, and labor costs have been lowered and standardized. The Company now hopes that it will be able to extend the plan to still more operations than it has up to the present.

VII. Wage Incentives in a Central Files Department

The Dennison Manufacturing Company of Framingham, Massachusetts, was among the first companies to apply wage incentive principles to office work. The same basic wage incentive plan, which had functioned successfully in the factory, was extended to the office. This wage payment principle was first applied to the Transcribing Department in the early 1920's. Starting with 1927, a great many more office jobs were studied and the incentive method of pay applied. The following job types, covering 80 clerks, have been successfully included under the incentive plan: Master Card Operators in Order Register; Sales Order Writers; Shop Order Writers; File Clerks in Central Files; Stock Order Pricers; Billers (using Moon-Hopkins machines); Hollerith Card Punchers and Verifiers; Payroll Clerks; Typists in the Transcribing Department; Dictaphone Operators in the Transcribing Department; Mail Clerks; Clerks operating Adressographs, Multigraphs and Duplicators.[1]

While some of these jobs are peculiar to the type of business Dennison is engaged in, many are found in most large offices. Among these is the centralization of filing functions in central filing departments. Although the ex-

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[1] Letter from Mr. Ervant H. Eresian, Assistant to Works Manager, Dennison Manufacturing Company, December 23, 1947

Form F 242

COST ANALYSIS RECORD

Figure 15

OPERATION FINISH NO. SHEETS FILE NO.

PAGE

SUBJECT MACH. NO. DEPT. START

MONTH	DAY

AMOUNT WORKER OBSERVER ELAPSED TIME HRS. MIN'S

SYMBOLS	DETAIL OF OPERATIONS	TIME PER	OPER.	WATCH READING	OPER. TIME	REMARKS	OPER.	WATCH READING	OPER. TIME	REMARKS	OPER.	WATCH READING	OPER. TIME	REM

PURPOSE OF THIS STUDY:

SET RATES ☐ CHECK RATES ☐ GENERAL COMPARISON ☐

I HAVE OBSERVED THE CONDITIONS UNDER WHICH THIS TIME STUDY WAS MADE AND BELIEVE THEM TO BE NORMAL STANDARD TIME CONDITIONS. I BELIEVE THE USUAL DENNISON QUALITY HAS BEEN MAINTAINED IN THE ITEM STUDIED.

SIGNED

tension of wage incentives to office work in general has been relatively infrequent, applications to central files departments has been even rarer. Many companies, however, maintain huge departments of this type, staffed with numerous clerks performing repetitive jobs that could be studied and put on an incentive basis.

All of Dennison's incentive rates, or standards, are based on either direct time studies or standard data derived from time studies. Work to be placed on incentive is studied and analyzed by the Methods Department, and the best way of doing the job determined. Operators are then trained in the new method before the time values are determined. Time studies are taken on experienced operators who are considered to be average operators.[1] The form facing this page is a reproduction of the time study sheet used at Dennison.

The Time Study

The operation to be studied is first divided into elements, which are defined as being the smallest units of work that can be accurately measured. To gain employee confidence, all studies are taken in the presence of employee representatives. The studies are taken with decimal

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1. Interview with Miss Mildred Barnard, Ratesetting Department, Dennison Manufacturing Company, January 13, 1948

PRODUCTION RECORD AFTER INSTALLATION OF STANDARD

Operator	Clock No.	Time Allowed	Time Taken	% of Std.	Date	Remarks

Figure 16

FINAL COST ANALYSIS SUMMARY AND PROPOSAL FOR STANDARD TIME

Dept.

Item **Size** **No. of Operators**

Material **Mach. No.** **Speed** **Class**

Operation **Standard Time:** **Min. Per.**

SYMBOL	ELEMENT	MINIMUM	FLAT TIME PER ELEMENT	NO. OF ELEMENTS IN UNITS RATED	REG. ALL. %	ADJ. %	STANDARD TIME	REFERENCES
					TOTAL			

Date **Signed**

TIME STUDY AND RATE SETTING D

watches, and, because it is thought to be the most accurate, the continuous method of recording time is used. Foreign elements occurring in the study are marked as such so that they will not be included in the computation of the elemental time. The study, or the elements if they are few enough or sufficiently large enough, are graded according to the time study engineer's opinion of the worker's effort and efficiency.

Establishing the Standard

The average time value of each element is determined by computing the arithmetic average of all the recorded time values after the foreign elements, and obvious high and low values, have been eliminated. Actual elemental time values are then summarized, and the proposal for "Standard Time" entered on the form opposite this page. The actual time values, plus allowances and a percentage for incentive, are interpreted into terms of standard time. This information is entered on the form facing Page 130, and must be approved by both management and worker representatives before being accepted as the accepted standard for the job. Rates for the different operations are expressed in terms of "Standard Time," i.e., the time allowed the worker to compulete stipulated numbers of units. Once a standard has been so established, it is never changed unless there is a change of method, or if a repeat time

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Figure 17

Page

No. Sheets

DENNISON INFORMATION

STANDARD METHOD AND RATE SHEET

DEPT. **DATE ISSUED** **NO.**

ITEM

OPERATION

SIZE

MACHINE NO. **SPEED**

STANDARD TIME **MIN. PER** **RECOMMENDED** **RES. DIV.**

CLASS **OPERATORS** **AUTHORIZED** **DIV. MANAGER**

DETAIL SPECIFICATIONS FOR EQUIPMENT, MATERIAL, METHOD, RATE, AND QUALITY

SAFETY PRECAUTIONS

Approved by												
Date												
No. Copies Wanted												

study, made at the request of workers who feel the standard is too tight, indicates corrections should be made.[1]

The Files Department

The Files Department staff is composed of the following personnel: 1 Supervisor, 1 Assistant Supervisor, 2 File Clerks, 1 Reference Clerk, 1 Schedule and Dispatch Clerk, 1 Typist, 1 Sorter and 1 Messenger. In the Files Department, correspondence, orders, and invoices are kept for all of Dennison's customers. All filing is done alphabetically. Records are kept in the active files for two years, after which they are transferred to semi-active files for two years, and then, finally, into dead storage for as long as retention is necessary.[2]

The department's active filing equipment is composed of 304 metal four drawer filing cabinets representing a total of 1216 drawers. A mechanical sorter, sorting trays and distributor carts are used to sort and segregate material for filing. The distributor carts were custom made for the Company and represent the results of a motion analysis of the sorting function. These carts stand waist-high and consist of metal boxes supported by braced metal

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1. Interview with Miss Mildred Barnard, Ratesetting Department, Dennison Manufacturing Company, January 13, 1948
2. Interview with Miss Helen Horan, Files Department Supervisor, Dennison Manufacturing Company, January 13, 1948

tubes. They are mounted on casters to facilitate their movement. Each box contains fiber-board dividers, the tabs of which are marked to conform with the alphabetic file divisions. They are arranged so that every other division is for the top two drawers of the filing cabinets, leaving the alternate divisions for the bottom two drawers. This method of division enables clerks to select the material to be filed in the bottom drawers at one time and thus eliminates excessive stooping. Incoming material to be filed is placed between the appropriate dividers, and, when a sufficient amount has been accumulated, the cart is wheeled to the appropriate drawers, and the material is filed.[1]

Application of the Incentive Plan to the Filing Department

Dennison's Filing Department incentive plan is on a group basis. It was felt by the Company that making the installation in this manner would be more effective than on an individual basis. One reason for the decision was occasioned by the constant interchange of duties among the personnel of the department. Another major reason for placing the department on a group basis was that the performance of each individual depends on how well the other

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1. Interview with Miss Helen Horan, Files Department Supervisor, Dennison Manufacturing Company, January 13, 1948

workers have performed their jobs. It is believed that operation on a group basis tends to promote greater harmoney and cooperation among the participants. The plan does not include the Supervisor, her assistant or the messenger.

Standards have been established for all the repetitive operations in the department and include the following: sorting, distribution, cross-reference, typing, stapling, follow-ups, filing and pulling. All Standards are expressed in terms of time per units produced and are usually scheduled as being so many minutes per unit, per 100 units or per 1000 units.[1]

The Supervisor of the department keeps a daily production sheet for each worker. Each sheet is headed up by spaces for entering the date and the worker's name and is sub-divided into five columns. The first column lists the corresponding Standards in minutes per units produced. The Supervisor enters the amount produced in the second column next to the operation worked on. The amount produced is multiplied by the Standard for the operation, and the Standard Time thus derived is entered in the fourth column. The actual time taken to produce the amount indicated in the second column, is entered in the last column.

1. Interview with Miss Helen Horan, Files Department Supervisor, Dennison Manufacturing Company, January 13, 1948

New Incentive Payment Plan

June 22, 1931.

Operators will be given a basic time work pay and an opportunity to earn extra pay on all work to which standards are applied.

The amount of extra pay for work on standards will vary with the amount produced above standards.

The following chart shows the percent of basic time work pay to be added for different rates of productivity.

Extra Pay Chart

% Productivity on Standards	% Basic Time Pay for all Time on Standards	% Productivity on Standards	% Basic Time pay for all Time on Standards
100%	0%	129%	11.3%
101%	.5%	130%	11.6%
102%	1.0%	131%	11.8%
103%	1.5%	132%	12.1%
104%	1.9%	133%	12.4%
105%	2.4%	134%	12.7%
106%	2.8%	135%	13.0%
107%	3.3%	136%	13.3%
108%	3.7%	137%	13.5%
109%	4.2%	138%	13.8%
110%	4.6%	139%	14.0%
111%	5.0%	140%	14.3%
112%	5.4%	141%	14.6%
113%	5.8%	142%	14.8%
114%	6.2%	143%	15.0%
115%	6.5%	144%	15.3%
116%	6.9%	145%	15.5%
117%	7.3%	146%	15.7%
118%	7.7%	147%	16.0%
119%	8.0%	148%	16.2%
120%	8.4%	149%	16.5%
121%	8.7%	150%	16.7%
122%	9.0%	151%	16.9%
123%	9.4%	152%	17.1%
124%	9.7%	153%	17.3%
125%	10.0%	154%	17.5%
126%	10.3%	155%	17.8%
127%	10.6%		
128%	11.0%		

The normal work day at Dennison's is 8 hours or 480 minutes. In their plan, as in others where rates are expressed as time per units produced, all time must be accounted for. Since bonus is only paid for work done on Standards, a strict record must be kept of time spent both on and off Standards. Work performed off Standards is paid for on the basis of base rates alone.[1]

The daily production sheets are totalled for Standard Time and Actual Time at the end of the week in order to compute the premium earnings. Bonus is paid on the basis of efficiency percentage, and no bonus is paid for performance below 100 per cent efficiency. Per cent of efficiency is determined by dividing the total Standard Time for the group by the total Actual Time. The formula could be expressed as $\frac{ST}{AT} =$ % efficiency. Determination of the bonus percentage is made by means of a scale which indicates the bonus percentage paid for corresponding efficiency percentages. A copy of the bonus per cent table can be found facing this page.[2]

The bonus percentage is based on a sharing system, and, due to the empirical nature of the earning curve, it seems to be a cross between the Halsey 50 -50 plan and

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1. Interview with Miss Helen Horan, Files Department Supervisor, Dennison Manufacturing Company, January 13, 1948
2. Interview with Mr. R. E. Davis, Supervisor Ratesetting Department, Dennison Manufacturing Company, January 13, 1948

an empirical plan. The curve flattens out as higher levels of efficiency are approached because the earning increment decreases. Dennison feels that the sharing feature is justified by their policy of paying high base rates. Where their plant is essentially a job shop, 50 per cent of the production work is done off Standards. Therefore, they believe that a policy of lower base rates and a higher bonus scale would be unfair to the employees when they were required to work off Standards.[1] Although the office workers are less likely to have to work off Standards, the same wage payment plan is followed to maintain uniformity of policy.

Dennison has found that using the incentive method of payment has put worker pressure on the Company to increase the amount of work covered by the plan. This pressure is looked upon by the Company as being a healthy sign and as being indicative of worker satisfaction with the plan where it has been applied. From all indications the application of the incentive method of payment to office work at Dennison's has proved beneficial to workers and Company alike. Workers have received bonuses as the reward for diligent application to their duties, and the Company

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1. Interview with Mr. R. E. Davis, Supervisor Ratesetting Department, Dennison Manufacturing Company, January 13, 1948

has benefitted by lowered operating costs.[1]

The Company has found that the presence of an incentive system induces beginners to work hard at becoming efficient. This is in spite of the fact that they are excluded from participation until they have attained and maintained a certain percentage of efficiency for six months.[2]

A question that is often raised in discussions over the relative merits of incentive plans is in connection with quality control. It is undeniable that the desire for higher earnings may cause workers with character failings to succumb to the temptation of sacrificing quality for the sake of quantity. Actions of this sort can well be the fault of management if tight or nigh-impossible standards are set. However, when standards are established, they obviously should be based on the production of acceptable work, and time allowed accordingly.

Dennison, in its Files Department, checks the work at infrequent intervals. A normal amount of errors is overlooked, but records are kept of the number made by each worker. Should the amount exceed normal expectations, a report is sent to the Personnel Department where it is

1. Interview with Mr. R. E. Davis, Supervisor Ratesetting Department, Dennison Manufacturing Company, January 13, 1948
2. Interview with Miss Helen Horan, Files Department Supervisor, Dennison Manufacturing Company, January 13, 1948

attached to the individual's record. Bonus earnings are not decreased because of errors committed. Warnings and ultimate dismissal are the lot of habitual offenders. It is the belief of the Company that proper training will do much to overcome the problem of quality control. Increased speed does not necessarily cause increased errors. In Mr. Davis' experience he has found the most proficient operators also to be the most accurate operators.[1]

Centralization of a company's filing in a files department, and the subsequent installation of an incentive system is not a panacea for efficiency and cost difficulties. If motion is wasted or time is spent needlessly, it goes without saying that incentives would only reduce a cost which actually should be eliminated entirely. Dennison had found that after properly engineering the job, they were able to apply wage incentive principles successfully to the filing operations. The plan has functioned well because the participants have been able to earn substantial bonuses.

The Filing Problem

A survey of the filing functions of the company as a whole should be undertaken if a major filing problem

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[1] Interview with Mr. R. E. Davis, Supervisor Ratesetting Department, Dennison Manufacturing Company, January 13, 1948

exists to determine whether centralization will promote service and/or reduce filing costs. This survey might well include a review of all the forms used by the company to determine, which, if any, can be eliminated, combined or simplified. The distribution of the copies of forms should be checked to see if all are necessary. It is only after such study and analysis that the scope, duties and functions of the files department can be accurately established.

After the functions of the department have been determined, it is necessary that consideration be given to the location of the department. The primary objective in establishing a central files department is to save space as well as the time of those who use the records. It is also important that related records be coordinated so that better working relationships be established between various units of the company.[1]

The location of the files department is based on the flow of work through the organization. It should, whenever possible, be located near the departments that use the records most frequently. Location should be adjacent to a carrier system or an elevator, if they exist, so that work will flow as fast as possible. Files departments can be laid out most economically in rooms with regularly

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1. Odell, Margaret K., and Earl P. Strong, Records Management and Filing Operations (McGraw-Hill, 1947), p. 51

shaped walls and with a minimum of dividing partitions.[1] Odell and Strong have listed the following factors as being some which must be considered when locating a files department:

1. The files to be centralized and their locations.
2. The control to be exercised over the files.
3. The department originating the material that goes into the files.
4. The departments that request the material from the files.
5. The volume of records and the frequency of filing operations.
6. The provision made for expansion.
7. The number of cabinets required for each planned file, both current and transferred, in all locations.
8. The number of cabinets in the present records department and the number of cabinets in storage space outside it.
9. The size and kind of cabinets for each planned file - letter, legal, check, voucher, tabulating, etc. - with outside dimensions of each kind of cabnet.
10. The estimated expansion required for each planned file for not less than one future year.
11. The number of safe files, with approximate weight when filled with papers.
12. The number and size of desks, tables, and chairs.
13. The number of devices used in the records department - mailing, distribution, and records - sorting, equipment; typewriters; duplicators; photographic equipment; sealing machines, etc.[2]
14. The bookcases or shelving required.

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[1] Odell, Margaret K., and Earl P. Strong, Records Management and Filing Operations (McGraw-Hill, 1947), p. 51

[2] Ibid., p. 52-54

The Measurement of Filing Activity

The effectiveness of the files department as a whole, as well as that of the participating workers, can only be measured by maintaining records of activity. The establishment of production reports necessitates the determination of units of measurement. The volume of records handled may be obtained either by measure, count or weight. The following paper statistics will indicate how measurement can be made when individual pieces are to be counted:

93 sheets of bond paper weigh 1 lb.
93 sheets of bond paper compressed measure 3/8 inch.
93 sheets of bond paper (4points each) caliper 372 points.
247 sheets of tissue carbon copies weigh 3 lbs.
247 sheets of tissue carbon copies compressed measure 7/16 inch.
247 sheets of tissue carbon copies (2 points each) caliper 494 points.
146 sheets of carbon copies weigh 1 lb.
146 sheets of carbon copies compressed measure ½ inch.
146 sheets of carbon copies (3 points each) caliper 438 points.
1000 points equal 1 inch. [1]

It is doubtful, however, if production measurement by points or inches is feasible in the case of subject or individual files of varying sizes which are made up of numerous pieces either in a folder or stapled together. A physical count probably would be the most

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[1] Odell, Margaret K., and Earl P. Strong, Records Management and Filing Operations (McGraw-Hill, 1947) p. 293-294

accurate method of measurement in these cases.

Accurate production standards cannot be determined for operations without knowledge of their details and of the conditions surrounding them.[1] The establishment of standards for files operations, as well as for any others, can be done only by means of time study. Standards cannot be accurately described unless the job has been closely studied. Standards should be based on an average, well-trained operator doing the job in the best possible way at a normal speed. Standards thus established must be guaranteed until there is a change of the method or they are demonstrated to be inaccurate. These standards can provide the basis for the introduction of an incentive system.

Companies that have been able to reduce the amount of material that must be filed and its retention period, to a necessary minimum through integrated studies, have progressed far down the road to efficient filing. In order to have a smoothly functioning files department, it is also necessary that the best filing and sorting methods be established, and the clerks thoroughly trained in them. However, as in other types of office work, it may be found that the rewards of an equitable incentive plan will encourage workers to continue to perform their work in the best possible manner.

[1] Odell, Margaret K., and Earl P. Strong, Records Management and Filing Operations (McGraw-Hill, 1947), p. 300

VIII. Miscellaneous Applications of Wage Incentives to Office Work

I. Westinghouse Electric Corporation

Although relatively few, there are some companies that have interesting applications of wage incentives to various phases of office work. One of the leaders in this movement is the Westinghouse Electric Corporation. Under the direction of Mr. G. Z. Wollam, Director of Wage Incentives, and Mr. H. W. Duncan, Staff Assistant in Payroll Accounting, the Company has been successful in adapting incentive plans to many different types of office work. In addition to the installations described later in this chapter, they have also covered work in their Blue Print, Shipping, Foreign Traffic and Billing, and Manufacturing Information Departments.

It is the firm policy of the Company that the work to be covered be measured by both time and motion study. All operations are time studied; the basic time is factored, and all necessary allowances are added. It is the aim of management to have incentive plans that are simple to maintain and operate. A major requirement is that all detailed operations be covered and set down in a "Formula of detailed operations," which is an open-book for all concerned. For the sake of simplicity, many related operations are combined into relatively few standards.

The Westinghouse Corporation uses the Standard Time Plan which is similar to the Hour-for-Hour or 100 Per Cent Bonus Plan advocated by Louden. There is a variation from the plan in that a sharing feature has been introduced. When the plan is on an individual basis, 75 per cent of the salary hourly rate is paid for each hour saved. In group applications the bonus is distributed to the participants on a point rating basis, each participant being rated, rather than on an actual elapsed incentive hour basis.[1] Point rating is discussed more fully in the section on the Westinghouse Invoice Department Plan.

A. Stenographic and Order Typists Plan[2]

This plan, inaugurated in March of 1947, is operated on an individual basis, and its announced objective is to stimulate production per employee and compensate properly the workers who produce in excess of the normal production expected for salary payment. Each participant is supplied with a manual which outlines the rules under which the plan operates.

1. Equipment and Measurement of Work

Standard typewriters are used for transcription

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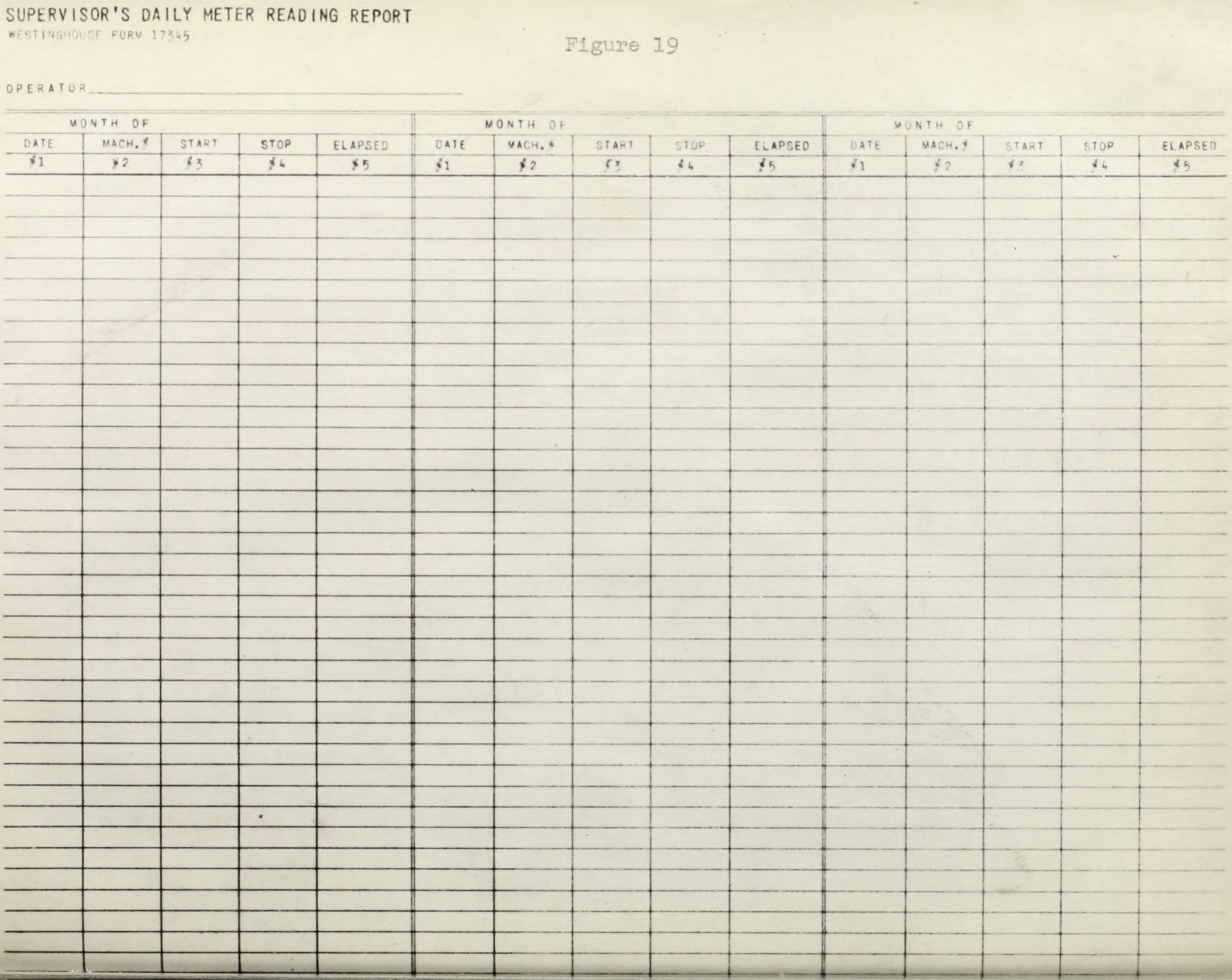
[1] Letter from Mr. H. W. Duncan, Staff Assistant Payroll Accounting, Westinghouse Electric Corporation

[2] Systems Manual for the Incentive Plan Covering the Operations of the XXX Department Typists - Effective March 10, 1947, Westinghouse Electric Corporation

Figure 19



SUPERVISOR'S DAILY METER READING REPORT
WESTINGHOUSE FORM 17345

OPERATOR________________________________

MONTH OF					MONTH OF					MONTH OF				
DATE	MACH.#	START	STOP	ELAPSED	DATE	MACH.#	START	STOP	ELAPSED	DATE	MACH.#	START	STOP	ELAPSED
#1	#2	#3	#4	#5	#1	#2	#3	#4	#5	#1	#2	#3	#4	#5

from cylinders, shorthand notes, longhand and printed copy, cutting stencils, and for special tabulations and fill-in work. Electric typewriters are used for the typing of Orders and Change Notices. Production is measured by 10 to 1 ratio Veedor-Root counters on which the space bar records. The Company requires the counters be tested each morning and uses the following six meter count sentence for that purpose: "Westinghouse sends its products to the markets of the world." The supervisor maintains a report for each operator (See exhibit facing this page.) upon which the starting and finishing meter readings of each day are posted. Provisions are also made for the notation of extraordinary occurrences such as transfers of typewriters which might cause delays.

2. The Standards

In the computation of the time values, an allowance of 15 per cent was included by the Standards Department for fatigue, personal requirements and minor unavoidable delays. It is for this reason periods of non-incentive or waiting time of five minutes or less are not credited.

The "Allowed Time" of each participant is computed by multiplying the meter counts of each class of work by the "Time Value" for that class of work. The Time Values are based upon a minimum use of the typewriter space bar.

All work is covered by three Time Values and corresponding "Counts per Hour" standards. Operation Number 1 includes typing from Dictaphone cylinders, shorthand notes, longhand copy, printed copy, and cutting stencils. Operation Number 2 covers the typing of Order and Change Notices. Operation Number 3 includes typing special tabulations and fill-ins on various types of cards and forms. Tabulations are interpreted as work which requires arrangement in two or more columns containing 50 per cent or more numerals.

Time allowances are included in the Time Values for the insertion and removal of carbon paper, distribution of copies, and the pinning of sheets for distribution.

3. Elapsed Incentive Time, Non-Incentive Time and Waiting Time

The elapsed incentive time, which is used to compute the bonus, consists of the total normal working hours of the bonus month less the sum of waiting, non-incentive, absence, vacation and furlough time.

When it is necessary that an operator perform work such as taking dictation, filing, clerical or other work that cannot be measured by meter readings, the time spent is considered non-incentive time, and it is excluded from the elapsed incentive time.

In the event an operator is forced to remain idle for want of work, the time spent is considered waiting time

Figure 20

ATTENDANCE, NON INCENTIVE TIME AND WAITING TIME REPORT FOR INCENTIVE PARTICIPANTS

Bonus Period ____________ To ____________

Location ________________________________ Name ________________________________

DATE	HOURS WORKED	HOURS ABSENT	VAC. & FURLOUGH HOURS	WAITING TIME			NON INCENTIVE TIME			NATURE OF NON INCENTIVE WORK
				START	STOP	ELAPSED	START	STOP	ELAPSED	
1	2	3	4	5	6	7	8	9	10	11
TOTAL										

Westinghouse Form 21456

and is excluded from the elapsed incentive time. The supervisor posts all non-incentive and waiting time for all opertors, but periods of five minutes or less are not allowed. A record of attendance, non-incentive, and waiting time is kept by the supervisor for each participant on the form facing this page.

4. Assignment of Work

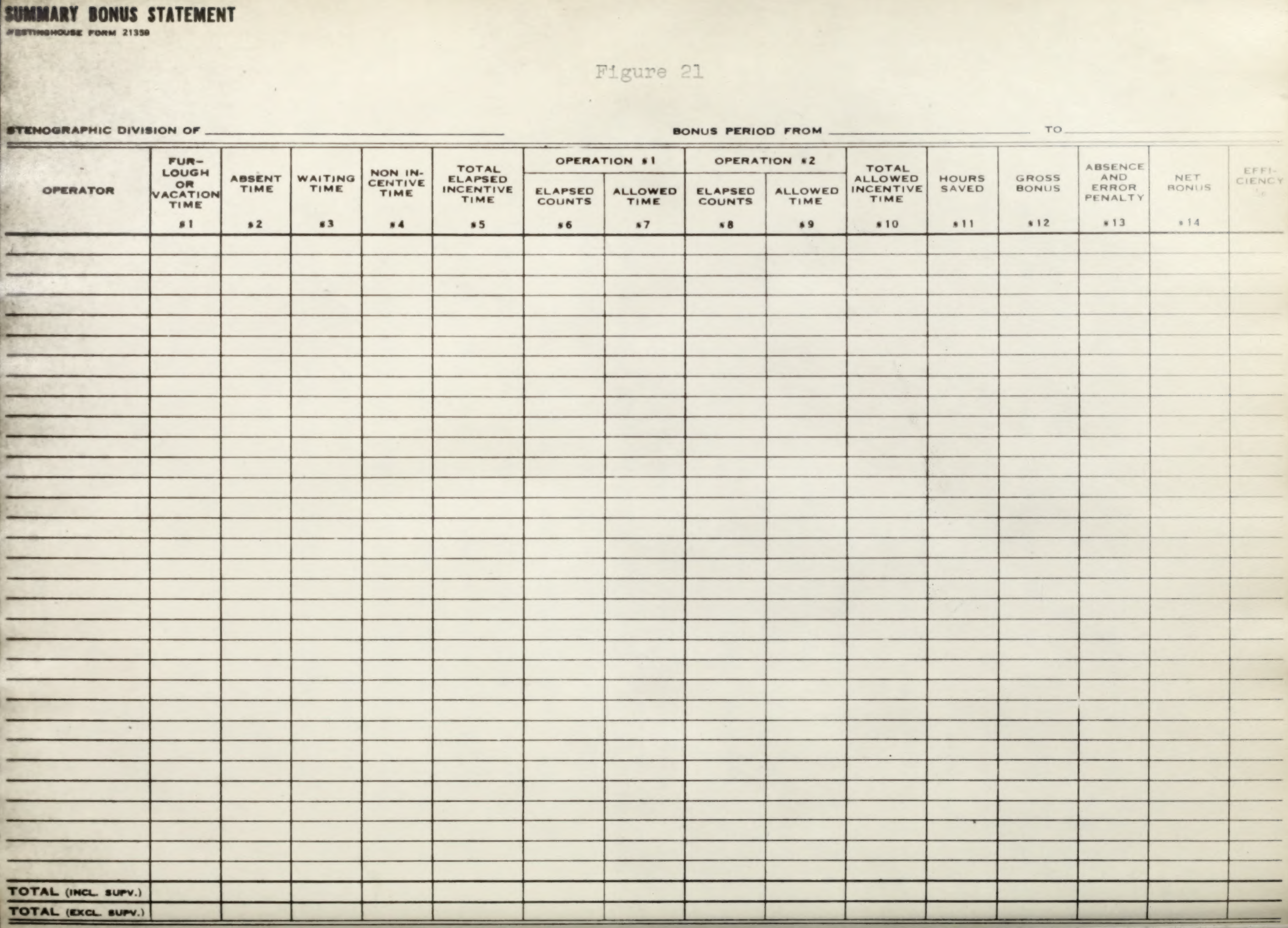
All work is assigned by the supervisor, and care is taken to give the same type of work to the same operator whenever possible.

5. Calculation of the Bonus

The hours saved by each operator are the basis upon which the bonus is figured. The difference between the "Total Allowed Hours" and the "Total Elapsed Incentive Hours" constitutes the hours saved. Individual "Gross Bonus" is computed when the hours saved by each operator are multiplied by the yearly average bonus hourly rate of all operators in the department. This figure becomes the "Net Bonus" if the operator has not been absent. The "Gross Bonus" is reduced 1 per cent for each hour of absence. The bonus rate is 75 per cent of the average salary hourly rate.

A Summary Bonus Statement (See exhibit facing Page 146) is prepared at the end of the bonus month by the

Figure 21



SUMMARY BONUS STATEMENT
WESTINGHOUSE FORM 21359

STENOGRAPHIC DIVISION OF ____________________ BONUS PERIOD FROM ____________________ TO ____________________

OPERATOR	FUR-LOUGH OR VACATION TIME #1	ABSENT TIME #2	WAITING TIME #3	NON IN-CENTIVE TIME #4	TOTAL ELAPSED INCENTIVE TIME #5	OPERATION #1		OPERATION #2		TOTAL ALLOWED INCENTIVE TIME #10	HOURS SAVED #11	GROSS BONUS #12	ABSENCE AND ERROR PENALTY #13	NET BONUS #14	EFFI-CIENCY %
						ELAPSED COUNTS #6	ALLOWED TIME #7	ELAPSED COUNTS #8	ALLOWED TIME #9						
TOTAL (INCL. SUPV.)															
TOTAL (EXCL. SUPV.)															

supervisor. This report is the Payroll Department's authority for the payment of bonus to the operators.

6. Penalties for Errors

When work has to be retyped because of errors committed by the operator, the meter counts accumulated are posted separately and marked "Do Not Pay." The supervisor also can make adjustment for errors by reducing the operator's allowed time 10 minutes per full or partially full sheet.

7. Supervisory Bonus

The Westinghouse plan provides for a supervisor's bonus. A "Supervisory Bonus Fund" is developed to compensate the supervisor for operating the department efficiently. The fund is composed of credits of X cents for each hour saved on Operations 1 and 3, and Y cents for each unit produced on Operation 2. A special reward of Z cents is paid the supervisor for each Allowed Hour created by her own typing. This special bonus is only paid when every member of the stenographic group has developed an efficiency of 100 per cent for the bonus month.

8. Probation Period

An instruction period of two months is allowed new operators. All incentive records are maintained for these months. Production for this period is excluded from

DAILY STENOGRAPHIC PRODUCTION REPORT
Westinghouse Form 21455

Figure 22

Operation No.______

Bonus Period __________ **To** __________

Location ______________________________ **Operator-Miss** ____________________

DATE	METER READING		ELAPSED COUNTS	TIME VALUE	ALLOWED TIME	SUPERVIS APPROV
	START	STOP				
1	2	3	4	5	6	7
	TOTAL					

the calculation of the Supervisory Bonus Fund if the operator fails to meet the requirements. However, the figures for the operator's production are recorded on the monthly bonus statement.

9. Record Keeping

The supervisor maintains and posts all records except the "Daily Production Report" which is kept by each operator. One of these reports (See exhibit opposite this page.) is issued to each operator each month. In the event the participant performs operations other than the one regularly performed, the record is kept by the supervisor.

Like many other companies, Westinghouse applies group incentives whenever they serve the purpose best. If the work to be covered is such that the output of workers is dependent on the performance of others, the Company has found group applications to be the most advantageous for all concerned.

B. Invoice Department Incentive Plan[1]

On March 1, 1947 the work of one of the Westinghouse Corporation's district office Invoice Departments was placed on an incentive basis. The plan is designed to cover most all of the department's work and is operated on a group

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[1] Central District Accounting Incentive Plan - Invoice Department Located at XXX, Westinghouse Electric Corporation, March 1, 1947

basis because the Company feels "This will promote cooperation between group members and will provide greater flexibility."

1. The Standards

The standards or "Time Values" for this plan were developed in a manner similar to those of the Stenographic and Order Typist Plan. All operations were time studied, and the Time Values derived, allocated to one of the "Volume Units" (or classes of work) picked. In this plan there are ten "Volume Units" consisting of various types of invoices, credit memoranda, and reports. The allowance is in terms of decimal hours per document.

The equipment upon which the standards are based has been carefully described so that should changes be made, they can be properly justified. The plan is based on the use of front-feed electric typewriters, calculators, comptometers and an adding machine. The use of certain snap-out forms is also mentioned in the event it is ever necessary to change the forms standards.

2. Elapsed Incentive Time, Non-Incentive Time, and Waiting Time

The elapsed incentive time of the group is the total time spent on invoice work by regular members or non-members of the Invoice Group. The net elapsed incentive time is the difference between the total working hours and

the sum of the waiting, non-incentive, absence, furlough, and vacation time.

When any member of the group is without work, the group leader either assigns him to other work or authorizes waiting time. All records of waiting time are kept by the supervisor and are credited against the elapsed incentive time. Non-incentive time is credited whenever members are required to do work not covered by the Time Values.

3. Bonus Calculation

The bonus is based on the total hours saved, which consist of the excess of the "Total Allowed Hours" over the "Total Elapsed Incentive Hours" of the group. The "Total Group Bonus" is the product of the total hours saved and the average bonus hourly rate of the group. The average bonus rate is equal to 75 per cent of the average salary hourly rate of all group members with the exception of the group leader.

Individual bonus earnings are computed by pro-rating the Total Group Bonus on the basis of "Point Ratings." There are eight individuals on the plan with point ratings from 15 to 90, with a total of 380 points for the group. The point rating assigned each participant determines what part of the total group bonus the individual has earned. For example, a point rating of 85 out of the total group points of 380 entitles the individual with that rating

to 85 parts out of the 380. This individual gross bonus is then reduced by the total of the penalties for absence and errors to arrive at the net individual bonus.

4. Absences, Errors, and Learning Period

Adjustments for absence and errors on the part of the operators are made in a similar manner to the Stenographic and Order Typist Plan. Provision is also made for adjustments due to learning time whenever new operators are added to the group.

5. Supervisory Bonus

This plan also provides for a supervisory bonus by the creation of a "Supervisory Bonus Fund." The manner of crediting the fund varies slightly from the other plan in that it is based on hours saved alone. The fund is credited with X cents for each hour saved by the group during the bonus month. A maximum bonus is set, and the supervisory bonus is not allowed to exceed this stated amount.

6. Record Keeping

The same "Attendance, Non-Incentive, and Waiting Time Reports" and "Supervisor's Daily Meter Reading Reports," kept by the supervisor in the Stenographic and Order Typist Plan, are maintained in this plan. A "Part Time Participant of Non-Group Member Report" is kept by the supervisor in the event of participation of this kind. (See

Figure 23

ELAPSED INCENTIVE TIME
FOR
PART TIME GROUP INCENTIVE EMPLOYES

MONTH ____________________

Participant	Date	Elapsed Incentive Time			Remarks
		Start	Stop	Elapsed	

exhibit facing this page.) The basis of bonus payment is the "Production and Allowed Time Report" which is prepared by the supervisor and forwarded to the Accounting Department.

II. Atlantic Refining Company[1]

The Atlantic Refining Company has been successful in applying work measurement and wage incentives to the following types of office work:

1. Typing from cylinders, shorthand and written material, and checking the finished work.
2. Calculating work including addition, subtraction, division, multiplication, writing answers, and checking.
3. Payroll operations of all kinds.
4. Billing, both listed and itemized, and all related operations including sorting and filing.
5. Operation of bookkeeping machines.
6. Punch card operations including key punching, verifying, and tabulating.
7. Addressograph operations.
8. Filing and stock card keeping.

These phases of office work are covered on an incentive basis under the original Emerson Efficiency Plan. All standards are established either from time studies or standard data derived from time studies. The standard

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[1] Mackenzie, R. S., "The Relation Between Work Measurement and Pay Earned," Incentives and Work Standards in the Office, Office Management Series No. 115, American Management Association, (1946), p. 13-14

Figure 24

Emerson Efficiency Bonus Scale

Efficiency in % of High Task	Bonus in % of Base Wage	Differential
67	.0001	
68	.0004	.0003
69	.0011	.0007
70	.0022	.0011
71	.0037	.0015
72	.0055	.0018
73	.0076	.0021
74	.0102	.0026
75	.0131	.0029
76	.0164	.0033
77	.0199	.0035
78	.0238	.0039
79	.0280	.0042
80	.0327	.0047
81	.0378	.0051
82	.0433	.0055
83	.0492	.0059
84	.0553	.0061
85	.0617	.0064
86	.0684	.0067
87	.0756	.0072
88	.0832	.0076
89	.0911	.0079
90	.0991	.0080
91	.1074	.0083
92	.1162	.0088
93	.1256	.0094
94	.1352	.0096
95	.1453	.0101
96	.1557	.0104
97	.1662	.0105
98	.1770	.0108
99	.1881	.0111
100	.2000	.0119
Increments of 1% thereafter	Increments of 1% thereafter	Increments of 1% thereafter

Lytle, C. W., Wage Incentive Methods, (The Ronald Press Company, 1942), p. 269

times for the operations represent 100 per cent efficiency, or the top average performance expected.

The plan operates on a two week basis. The total allowed standard time for the period is divided by the actual time taken to perform the work to determine the percentage of efficiency. The payment of bonus starts at 66 2/3 per cent efficiency. The increment increases, and a 20 per cent bonus is paid at 100 per cent efficiency. At 110 per cent efficiency a bonus of 28 per cent is paid. (The table facing this page indicates the usual Emerson efficiency bonus correlation.) The bonus percentage is applied only to the portion of time actually spent on incentive work.

Incentive applications are either on a group or individual basis. The Company's decision rests on whether or not the separate contribution of each worker can be isolated or whether there is a need for emphasizing team work.

The Atlantic Refining Company includes supervisors in their incentive plans. Supervisor participation is justified on the grounds that they can contribute to extra performance and increases in group efficiency by better planning, distribution of work, training and encouraging the use of proper work methods. The Company is of the opinion their plans would not be nearly as successful as they are if the supervisors were not included.

III. The Hood Rubber Company

A. Central Service Department[1]

Among many of Hood's applications of wage incentives to office work, is the coverage of most of the operations of the Company's Central Service Department. The plan (the modified Bedaux Plan described in Chapter VI, Pages 120 to 121) includes 12 people and covers typing, addressing, and duplicating work. The department's function is principally a service one. Duplicating, copy typing, and transcription from cylinders is done for other departments as well as the addressographing of payroll envelopes. The department is equipped for the most part with electric typewriters because management believes they are capable of greater production. All typewriters are equipped with 10 to 1 Veedor-Root counters which are used for the production count of each operator.

B. Planning and Scheduling Department[2]

This department's main function is to devise the routing of work and to prepare the job instructions for each manufacturing operation. It is also responsible for the preparation and duplication of the job tickets which accompany each of the thousands of job lots through the

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1. Interview with Mr. Arthur B. Porter, Office Manager, Hood Rubber Company, February 13, 1948
2. Ibid.

factory. The tickets are perforated to facilitate the detachment, by the worker performing the operation, of each stub upon completion of the work called for. The stubs are turned in and are used as a basis for production counts.

Up until recently the tickets and the job instructions were reproduced by direct process Multigraphs with the standards for the operations being inserted by Addressographs on the job tickets. Both of these duplicating operations have been on an incentive basis for some time. However, a change in method is being introduced which may effect a change in the standards. The job tickets as well as the job instructions are to be duplicated by offset equipment. The preparation of offset plates on electric typewriters will eliminate the type setting necessary on the Multigraph.

Other of the department's functions such as sorting, collating, and messenger activities have also been included in the incentive plan.

C. Payroll Figuration Department[1]

One of Hood's most successful applications of wage incentives to office work is the plan covering the Payroll Figuration Department. The plan was inaugurated just prior

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[1] Porter, Arthur B., "How to Determine Staff Requirements," Keeping the Lid on Office Costs, Office Management Series Number 120, American Management Association, (1947), p. 23

to World War II. Before the incentive installation, 40 clerks were needed to handle the payroll figurations for 3,600 factory workers. Separate pay computations are required for the workers because the majority of them work under an incentive plan. The work of the figuration clerks is performed, for the most part, by the use of comptometers. The principal operations are those of addition and multiplication.

One indication of the plan's success may be gained by comparing production before and after the incentive wage payment was introduced. Before the plan one clerk was required for every 90 factory workers. Today 27 figuration clerks handle payroll computations for 6,000 workers; an average of one clerk for every 222 workers. This represents an average production increase of two and one-half times pre-war productivity.

In order to achieve this mark, the clerks are working a 100 point hour. Bonus is paid for performance above a 60 point hour level; therefore, 100 point hour performance entitles workers to a bonus of 66 2/3 per cent of their base rates.

The Company has found that not only have production and earnings increased as a result of the installation, but the quality of work also has improved. The number of errors committed has been reduced to one-fourth of

the number normally expected during the pre-incentive period. It has been the experience of the Hood Rubber Company in all of its incentive applications that the most productive workers are also the most accurate workers.

IX. What is the Future for Wage Incentives in the Office?

Today, as in few times in the past, the country is faced with the problem of high wages, while manufacturers decry the relatively low productivity of workers. The unit cost of almost every manufactured article has risen and continues to rise unabated. The same cost and production problems facing the factory are evident in the office.

The entire clerical productivity problem is brought into sharp focus, when it is realized that surveys of offices employing workers on a salary basis revealed that average worker performance varied between 42 per cent and 58 per cent of the output that could be normally expected.[1] The full magnitude of the situation cannot be appreciated until the lost production time is multiplied by the pay received by office workers for that time. Assume the average annual salary of office workers to be $2,000 per year, overlooking for the moment whether or not this is just compensation for performance at task. The country's 7,050,000 clerical workers in 1947 would have represented a cost of over 14 billion dollars to the economy for this type of work. Even if the average office worker performed at two-thirds of task, which is a high estimate compared with the average pre-incentive survey, we, as a nation, are

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[1] Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 228

spending almost 5 billion dollars more than is needed for these services.

The widespread increase in office work coupled with the low productivity of clerical workers has created "space" problems for many companies. In order to accommodate the additional clerical workers needed, an expansion of facilities has become necessary for many companies. Some companies were fortunate enough to have sufficient floor space available. Many have solved their problem by renting additional space, often at an inconvenient distance, in order to house part of their employees. Unfortunately office space is at a premium in many cities, and usuriously high rates frequently have to be paid to obtain it. A few companies have had to undertake new construction during the present period of almost prohibitively high building costs in order to meet their needs.

Adding more workers requires the purchase of additional desks, chairs, supplies, typewriters, adding machines, calculators, and many other types of office equipment and supplies, all of which are more costly now than ever before. Some companies are trying to meet the problem by spending heavily for new types of office equipment that is supposed to increase clerical productivity, without giving too much thought as to how they are going to induce the workers to utilize the equipment properly.

The clerical productivity problem also has been intensified by the shortage of qualified workers. While employment stays at a high level throughout the country, and office worker salary scales remain at levels substantially below those of other types of work, the more capable workers are attracted into the better paying jobs. Even if the wages of office worders are lower than those that are received in other types of jobs, considering the necessary requirements, in the light of the average productivity of office workers, some people are inclined to think they are overpaid. How then is the average office worker going to be induced to better his performance and thereby prove his greater worth to the company?

Stimulation of the desired response may be effected by appealing to one of several of the many forces that govern the behavior of man. Among the various types of appeal that may be used to arouse greater effort are the desire for material gain, fear, pride, rivalry, loyalty, and others. Each factor or combination of factors may affect the response of the worker greatly. Whatever the means employed by management to arouse action on the part of the worker is an incentive. For example, the desire for material gain may stimulate the worker by the payment of bonuses for better than average production.[1] J. K. Louden

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[1] Anderson, Kenneth B., "Incentive and Supplementary Wage Payments," Handbook of Business Administration (McGraw-Hill, 1931), p. 644

in evaluating various wage payment methods said,

> Regardless of one's personal opinion of incentives, it is difficult to deny that a soundly conceived and executed incentive plan is the best and most satisfactory method yet devised to recognize and reward individual differences in workers on the same operation. [1]

Wage payment based on straight salaries persists in office work for many reasons. Clerical incentives, and their accompanying analyses, have been used for years by many companies, but their use has never become very extensive. Manufacturing operations have received most of the industrial engineering profession's attention, and the last 25 or more years have witnessed the development of many incentive systems for manufacturing operations. Controls for indirect labor in the factory have not been given the same attention. The result has been that performance standards for this area of activity have not been as systematically developed. That this is mostly true for the clerical functions of many non-industrial companies is primarily due to the fact that they do not have engineers and analysts who are capable of determining adequate controls for clerical operations.[2]

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1. Louden, J. Keith, Wage Incentives (John Wiley and Sons, Inc., 1944), p. 8
2. From a copy of the script of the address entitled Incentive Compensation in the Office, delivered by Mr. G. Z. Wollam, Director Wage Incentives Department, Westinghouse Electric Corporation, before the Baltimore Chapter of the National Office Management Association on October 21, 1946

Despite the fact that the office has been late in developing incentive programs, it now has the opportunity to go ahead in this field. The broad experience afforded by industrial applications of incentive principles provides a firm foundation upon which the office can profitably build. The establishment and testing of basic techniques has been done, and in many instances the feasibility of their extension to office work has been demonstrated. The desirability of effective methods analysis is generally accepted. The mystery surrounding time study and its techniques has been dissolved. Numerous types of incentive plans are available so that a choice is presented which enables interested companies to select the one or ones best suited to their own particular circumstances.[1] The best methods to follow when selling the program to the individuals involved also has been established.

Although the use of machines in office work is increasing, they do not predominate as they do in many industries and are, for the most part, of such a nature that they cannot set the pace. Usually clerical jobs require varying abilities and, therefore, are apt to offer the individuals performing them a wider choice of action. The psychological aspect that deals with the partly real,

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1. Mackenzie, R. S., "The Relation Between Work Measurement and Pay Earned," Incentives and Work Standards in the Office, Office Management Series Number 115, American Management Association, (1946), p. 13

partly imaginary distinction between office and factory workers must not be overlooked. For these reasons the following of factory experience when extending wage incentives to the office should be done cautiously.[1] Mr. G. Z. Wollam listed the following factors as being the necessary "Fundamentals of Clerical Incentives":

1. Apply office incentives to clerical operations where there is a definite measure of accomplishment.
2. Apply incentives only after a sound system of installation and administration has been determined.
3. Before a clerical incentive plan is installed, the office force should understand it and favor its installation.
4. Select and train personnel capable of properly installing and administering the plan.
5. Make certain that office procedures and clerical functions are properly coordinated before setting performance standards.
6. Determine the relationship between departments, the work requirements, and the sequence of operations which must be followed.
7. Establish sound and accurate performance standards.
8. Provide a guarantee of permanency of performance standards against unwarranted changes.
9. Be in a position, at any time, to review with the employes affected the studies and data by which standards are established.
10. Assign work to participants in an impartial manner without discrimination.
11. Provide an adequate determination of

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1. Lytle, Charles W., Wage Incentive Methods (The Ronald Press Company, 1942), p. 402

current performance and proper approvals for incentive payment.

12. Maintain an accurate attendance control.
13. Provide procedures for recognizing interruptions of work, delays, and other irregularities not covered by performance standards.
14. Provide a periodic audit of the measures of performance, authorizations, and approvals.
15. Avoid any form of subsidization.
16. Encourage employes to meet and exceed standard performance.
17. Maintain a constant follow-up of procedures, systems, forms, departmental functions and relationships.
18. Change performance standards promptly as changes occur in conditions which affect the incentive plan. [1]

Once management decides that the application of wage incentive principles to office workers can be beneficial to both the participants and the company, it is faced with the problem of who is going to accomplish the fact. It is extremely important that the right type of personnel be chosen for training in the installation of clerical incentive systems. Office managers of industrial organizations often select men who have had experience with the administration of incentives in manufacturing departments.

G. Z. Wollam feels that although many of the same fundamental principles apply to both clerical and manufac-

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[1] From a copy of the script of the address entitled Incentive Compensation in the Office, delivered by Mr. G. Z. Wollam, Director Wage Incentives Department, Westinghouse Electric Corporation, before the Baltimore Chapter of the National Office Management Association on October 21, 1946

turing incentive installations, men who can successfully handle the detail work in manufacturing applications, may not necessarily be well qualified to establish office standards. This work requires analytical men who can evaluate the functional relationships of departments and understand organization lines, and who can determine the relative importance of operations performed by various departments. Men establishing office standards must also be capable of organizing operations and establishing their proper sequence. The analyst's formal education should have been along technical or semi-technical lines, such as engineering, accounting, and business administration. He will also be better qualified if he possesses a practical knowledge of office procedures and an understanding of the Company's organization.[1] Wollam is of the opinion that only one fully qualified man, who has had a minimum of 2,000 hours training in the following fields would be required to establish and administer office incentives for each plant or company:

1. Analysis of operations.
2. A study of office equipment.
3. The principle of motion economy.
4. The relation of departments, their

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[1] From a copy of the script of the address entitled Incentive Compensation in the Office, delivered by Mr. G. Z. Wollam, Director Wage Incentives Department, Westinghouse Electric Corporation, before the Baltimore Chapter of the National Office Management Association on October 21, 1946

functions and the flow of work.
5. A study of the technique of breaking down operations into their fundamental elements.
6. Methods of timing those elements.
7. Procedure for evaluating the performance of the individuals studied.
8. Procedures for currently administering a clerical incentive plan.
9. Policies of the company which have to do with incentives and employes. 1

The benefits to be derived from effective wage incentive installations have been enumerated and testified to by countless proponents. Unfortunately, most of the endorsements by management emphasize savings and increased production and overlook, for the most part, the economic justification for incentive principles. The very person whose increased efforts, in response to incentive urges, effects increased production, is often overlooked. He is the one that is motivated, and it is he who lowers costs by responding in the expected manner.

Management should always be aware of the "human element," when seeking to stimulate production. Wage incentives by themselves are not panaceas for production and cost ills. Employee cooperation cannot be effectively solicited on the basis of monetary reward alone. The importance of the effect of incentives of a non-financial nature

1. From a copy of the script of the address entitled Incentive Compensation in the Office, delivered by Mr. G. Z. Wollam, Director Wage Incentives Department, Westinghouse Electric Corporation, before the Baltimore Chapter of the National Office Management Association on October 21, 1946

should not be overlooked. Mr. R. E. MacNeal, Secretary of the Curtis Publishing Company, when discussing motivation, carefully drew a distinction between a motive and an incentive. He pointed out that "Webster's Collegiate Dictionary defines motivation as 'that within the individual, rather than without, which impels him to action,' and a motive is a consideration which determines choice or induces action; an inducement is an attractive consideration held out to persuade; an incentive incites performance." Mr. MacNeal cautions against impulsive wage incentive applications by saying,

> Obviously we must not become so busy with inducements and incentives, that we overlook motives, since motives may impel an employee to action even while he is considering inducements or incentives. In other words we must not become so concerned over a man's pocketbook that we forget what goes on in his mind. 1

In developing this point further Mr. MacNeal said,

> A prerequisite to good management is an understanding of employees' mental processes, their subconscious reactions, and the effect of physical factors on both. To apply it requires the creation of both a policy and a plan of procedure which will, within the employer's ability to provide them, permit the highest development and prosperity of which an individual employee is capable,

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1. MacNeal, R. E., "Effective Motivation," Proceedings 28th Annual Conference, National Office Management Association 1947, National Office Management Association, (1947), p. 119

> within a period of time compatible with the welfare of the entire group. The group must produce the greatest quantity and quality, with the least expenditure of energy and materials, at the lowest possible unit cost, under the best working conditions. It is not enough to facilitate production alone, we must try to create and preserve enjoyment with its accomplishment and pride in the product. 1

There are various non-financial incentives which help to maintain employee morale by evidencing employer good will. Life insurance, hospitalization, medical and surgical insurance, and accident and health insurance coupled with pension plans, all of which are paid wholly or partly by the company, relieve employees of certain worries and assure more security. Paid vacations, rest periods, and illness allowances are generally recognized as being necessary for effective personnel management. Cafeterias, pleasant working conditions, educational programs, recreational facilities and programs, employee publications and organizations, and music while working also have been recognized by many as being important contributing factors to employee morale.

The use of wages as production incentives should be considered as an integral part of the larger problem of

1. MacNeal, R. E., "Effective Motivation," Proceedings 28th Annual Conference, National Office Management Association 1947, National Office Management Association, (1947), p. 121

management. Employee productivity depends as much upon facilities, materials, methods, training, working conditions, and other factors under the control of management as upon employee effort. The successful use of wage incentives requires that these factors be treated together with the other forces that influence the workers' desire to produce.[1]

Wage incentives, in a well rounded program, are an integral part of management and not a substitute for it. Actually the more precise the incentive application is, the more highly developed management must be to handle it. Comprehensive incentive installations tend to create new management difficulties as do other advances in management technique, but at the same time, they also make a higher degree of management possible. If the incentive program is used by an understanding management that realizes its responsibilities, and recognizes it as being only one of the factors that influence the efforts of employees, it can be effectively joined with the other forces to affect worker effort. Mr. Elliott Dunlap Smith said in reference to this problem, "The character of an incentive and of what it conduces to depends less upon its form than upon

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1. Smith, Elliott D., "Compensation and Incentives," *Handbook of Business Administration* (McGraw-Hill, 1931), p. 1167

the character and purpose of the organization of which it is an element."[1]

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[1] Smith, Elliott D., "Compensation and Incentives," Handbook of Business Administration (McGraw-Hill, 1931), p. 1168

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Parker

Application of wage incentives to selected phase of office work

DATE	ISSUED TO
10/20	Thomas Carroll
apr. 14	Stewart Rich
5:00	Durant, Richard

10/20

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